

BRAZIL

THE AMAZONS

AND THE COAST.

HERBERT H. SMITH.

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B R A Z I L



# BRAZIL

## THE AMAZONS AND THE COAST

BY

HERBERT H. SMITH

*ILLUSTRATED FROM SKETCHES*

BY

J. WELLS CHAMPNEY

AND OTHERS

NEW YORK  
CHARLES SCRIBNER'S SONS  
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TO  
SENHOR D. S. FERREIRA PENNA,  
OF PARÁ,

AS A MARK OF SINCERE ADMIRATION FOR HIS  
GEOGRAPHICAL STUDIES ON THE LOWER AMAZONS,  
AND AS AN ACKNOWLEDGMENT OF  
MY GRATITUDE FOR HIS MANY KINDNESSES,  
THIS BOOK  
IS DEDICATED.



## P R E F A C E.

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I N 1870, when a young student, I made a trip to the Amazons in the company of my friend and teacher, Prof. C. F. Hartt. The glimpse of tropical life which I then obtained, acted as a constant attraction to draw me back to these glorious forests and rivers. In 1874 I returned to Brazil, with the design of collecting and studying the Amazonian animals. After two years, spent in the vicinity of Santarem, I was requested by Prof. Hartt, then in charge of the Brazilian Geological Commission, to make some explorations on the northern tributaries of the Amazons and on the Tapajós. These explorations occupied, altogether, more than a year. On their completion I went to Rio de Janeiro, spending four months there before returning to the United States.

It was then that I began to dream of writing a book on Brazil, but for a long time the idea remained latent. I had, indeed, a large mass of notes, and a collection of about one hundred thousand specimens, principally entomological; but the notes were thrown together at random, and a large portion of the collections were still in their packing-boxes. Heretofore my reading of books on Brazil had been desultory and not very extensive. I now began to collect such works as I could obtain, and to compare the views of the various authors with my own observations. This taught me a new difficulty. I found that most travellers either praised Brazil unduly, or condemned the country altogether. From my pleasant

observations of tropical nature I was inclined to side with the farmer class, but I felt that I could not write fairly of social and commercial life without more careful study.

At this juncture the Messrs. Scribner & Co. invited me to write a series of articles on Brazil for their magazine. Through their liberality I was enabled to make two more trips to South America, revisiting Rio and the Amazons, and making special studies of the coffee and sugar industries, of social and commercial life, and, finally, of the famine district in Ceará. Mr. J. Wells Champney, the artist, was my companion on one of these trips. To him I am indebted, not only for a series of very accurate and beautiful drawings, but for many keen observations and intelligent criticisms on Brazilian nature and society.

With these added studies, I began the present work. As my personal adventures and observations were, in themselves, hardly worth writing about, I have avoided a purely narrative form. I have, rather, endeavored to frame a series of essays, with a general loose connection, but varying in tense and person as the subjects seemed to require. While generally confining my descriptions to the ground that I have personally been over, I have tried to make them typical of the whole, so that the book, though it does not describe the whole of Brazil, may yet present an intelligible picture of the country. Naturally, I have dwelt most on the scenes that I love best—the wild streams and glorious green forests of the Amazons. When I have treated of the less pleasant social and commercial life, I have endeavored to weigh my own opinions carefully with those of other persons, and to judge fairly from the whole ; thus, the book may appear contradictory in parts, because it does not always praise, nor yet wholly condemn, the Brazilian people. I believe that this is a difficulty which every author must meet, who attempts to write the truth about any nation.

The series of six articles on Brazil, first published in Scribner's Magazine, have been embodied in the present work, but with so

many changes and additions as to give them an entirely new character.

Among the many kind friends who have assisted me in my work, I can speak here only of a few. My thanks are especially due to Sr. D. S. Ferreira Penna, and to His Excellency, Dr. F. M. C. de Sá e Benevides, late President of Pará ; to Mr. R. J. Rhome, of Taperinha ; to His Honor, the Baron of Santarem, and to Sr. Caetano Correa, of the same place, as well as to many American colonists of the vicinity : to Dom Manuel Onetti, of Monte Alegre ; to President Julio, and Sr. Morsing, of Fortaleza ; to Dr. Gomes Pereira, of Baturité ; to Mr. H. H. Swift, and Dr. Mamede, of Pernambuco ; to Maj. O. C. James, of Rio de Janeiro ; and to Sr. Miranda Jordão, of Bem Posta. Among my American coadjutors, I must mention the officers of the American Geographical Society.

Besides the illustrations by Mr. Champney, a number of drawings were made by Mr. Wiegandt, of Rio de Janeiro ; a few were worked up from photographs, by various artists ; three were borrowed from Keller. The zoölogical drawings, in Chapter VII., are by Mr. J. C. Beard.

Two chapters, which, in their nature, did not admit of illustrations, have been placed at the end of the book ; and one, of a more exclusively scientific cast, has been reduced to the form of an appendix.

I hope that this may be but the beginning of my studies on South America. As such, I offer it to the reading public.

BROOKLYN, N. Y., Dec. 1, 1879.



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SKETCH MAP  
OF THE  
**AMAZONS**  
AND ITS TRIBUTARIES.  
Near the mouth of the  
TAPAJOS.

AMAZONS

TAPAJOS

STUY-CAMPO

RANCHO CAMPO

Scale 1:10,000

North Arrow

The portion embracing the region to the south of the Amazon and west of Tuyuti was originally from a manuscript map of Senhor D. S. Ferreira Penna, that of the Lower Trombetas was taken in part from the map of that river published by Dr. João Barbosa Rodriguez, the remainder is original.

## REFERENCES

# BRAZIL :

## THE AMAZONS AND THE COAST.

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### CHAPTER I.

#### THE GREAT RIVER AND ITS HISTORY.

ON the fly-leaf of an old copy of Schiller I find this note :

“ July 26th, noon, long.  $47^{\circ} 30'$  W. G., lat.  $5^{\circ} 30'$  N. Water slightly discolored, assuming a greenish tint ; current from the southwest.”

The charts indicate similar discolored patches all along the coast of Guiana, and as far north as lat.  $9^{\circ}$  or  $10^{\circ}$ . In these patches the current is from the southwest, south, or southeast. The line of green water runs parallel to the coast, but two or three hundred miles away from it. There are no shoals here ; bottom is beyond the reach of ordinary soundings.

Consulting that clever book of travels, Mr. Bates's “ Naturalist on the Amazons,” we find noted on the last page a curious observation made in these seas :

“ On the 6th of June, when in  $7^{\circ} 55'$  N. lat. and  $52^{\circ} 30'$  W. long., we passed numerous patches of floating grass mingled

with tree-trunks and withered foliage. Amongst these masses I espied many fruits of ubussú palms." The ubussú, or bussú (*Manicaria saccifera*), is an Amazonian tree, growing along the narrow channels about Marajó. "And this," says Mr. Bates, "was the last I saw of the great river."

The green tint, then, is caused by intermixture of fresh water, in which are suspended particles of yellow clay. The fresh water was gathered far westward on the slopes of the Andes; the clay has been washed from muddy banks over the whole breadth of Brazil.

Farther south, near the equator, and still a hundred miles from land, the sea is much more strongly tinged; in April and May, indeed, it has nearly the clay-yellow hue of the Amazons itself, and furious currents struggle with each other until the surface boils and seethes as below a cataract. The flood of turbid waters, after this first battle with the ocean, gives way before the yet stronger equatorial current; its flank is turned, and it sweeps away northward, staining the sea with the blood of its defeat, littering it with débris, madly rushing into the heart of the enemy's country, until its last forces are exhausted and it sinks to annihilation, six hundred miles from the field of battle.

Down on the ocean-floor the king is building his monument; such an one as you may have seen of the old-time rivers—sheets of sandstone and shale, stretching over hundreds of miles, rising into hills and mountains, furrowed by lakes and valleys. We shall see presently how he is building along the great valley; building, and tearing down, and rebuilding, with a restless impatience of his own work. But this ocean monument grows steadily, for the river-king wills that his name shall live; through years and centuries he has been washing away the continent and spreading it under the sea.



From green water to yellow water, and off through the forests and plains of the Amazons valley. It will be rough life for us, with rough pleasures and cares ; but there is health in it, and bright sunshine and green boughs, and a glimpse of nature-love there at nature's heart.

In the outset we must survey our field and see what other explorers have done here.

The Amazons is not the longest river in the world ; it is even a good thousand miles shorter than the geographies would have it, for they set it down at four thousand miles. The more probable estimates give two thousand seven hundred and forty miles from Lake Lauricocha along the river-curves to the Atlantic ; or, if the Ucayali be considered as the source, the length is rather more than three thousand miles. In either case, both the Mississippi and the Nile are longer than the South American river. But the Amazons is wider and deeper than either of them ; it carries more water than the two together ; and it has a vastly greater extent of navigable surface, what with the side-channels and the mighty tributaries.

This immense river-system, that can stain the sea for six hundred miles from its mouth, is dependent, too, on great causes ; and often very remote ones, which we must seek out carefully. First, the configuration of the land. The northern part of South America is a plain—a low one, with gentle slopes. On the western side this plain is bordered by the Andes, snowy peaks away up in the cloud-region. To the north the Andes sweep round through New Grenada and Venezuela ; to the south there are high table-lands in Central Brazil. The plain is, in fact, a great basin, shut in on three sides, but open toward the east. Here the northeast and southeast trade-winds blow in freely, as they blow over the

tropics all round the earth. Hot winds, sweeping over a warm ocean. They take up water, every hour, until they are full of it—saturated, so that the least puff of cold air sends torrents of rain down over the ocean. When they reach the South American coasts they are heavy with moisture, more than any other winds in the world. The sun is the furnace, the Atlantic is the retort, South America is the receiver.

Cool land-currents strike the trades and condense their moisture. Already, near the coast, there are daily rains ; and then, far to the westward, come freezing Andean winds, meeting the warm ones from the East, whirling about with them, rising and eddying and tossing, and filling the sky with clouds at every pace. Here the rains are almost constant, and the air, and ground, and trees, are all soaked and dripping. On the Upper Amazons, if a gun is kept loaded overnight, it will not go off in the morning ; sugar and salt deliquesce so rapidly that it is almost impossible to keep them ; books and furniture and clothes drop to pieces. “All our watches stopped,” says Orton.

Now the winds strike cold mountain-sides, snowy peaks, and beds of ice. There yet more of their moisture must be wrung from them, until, dry and cool, they pass on to the Pacific, over a country almost devoid of vegetation, except along the river-courses.

They have not always kept close to the ground. On the Lower Amazons, and as far up as Manáos, the prevailing winds are easterly ; after that the trades form an upper current, and near the plain there are variable winds, where eddying currents from the mountains come in. But on the high Andean peaks the breeze is steadily from the east.

This great basin that I have described receives more rain

than any other region in the world of like extent. The water is collected in channels—brooks from the Andes, and streams on the dripping lowlands, and rivers pouring toward the east; finally the whole is gathered into two great troughs, the Amazons and the Orinoco—two river-systems that are almost combined above, but separated below by the mountains of Guiana, the highest land in the basin. These Guiana mountains will not compare with the Andes; but they are quite high enough to affect the rainfall. If report be true, indeed, some of the peaks are nearly ten thousand feet above the sea-level; and even near the Amazons there are spurs sixteen hundred feet high—flat-topped

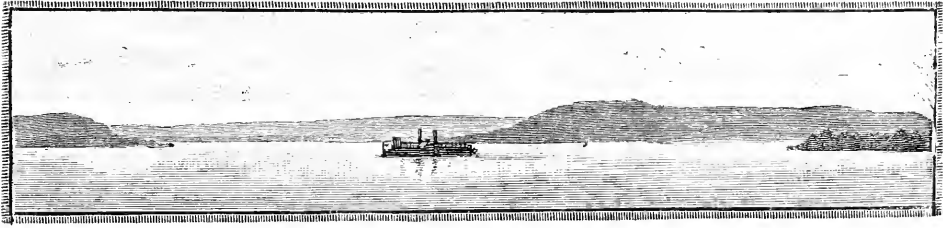


Table-topped Hills of the Lower Amazons.

hills of Almeyrim and Velha Pobre. To the highest range sweeps our northeast trade-wind, and the Guiana slope is all moist and dripping—a matted forest down to the coast; Sir Walter Raleigh, wandering there in search of El Dorado, was drenched and steamed into a proper respect for the country. But on the southern side of the range is precisely the driest region along the main Amazons; dry comparatively, that is, for even there the rains are heavy enough in the winter; but in August and September there are weeks together without even a shower. So here the great forest is interrupted; you find it along hill-sides and about the river-courses, but on level ground you shall walk, or gallop if you please, for days, over open stony lands and sandy campos,

with a stunted growth of trees—a region altogether unlike the rest of the valley. Real forest must have good, pouring rains; but here the rain has all been stolen away by the mountains.

On the other side of the Amazons, if we ascend the Tocantins or the Xingú, we shall find that the summer climate grows drier as we advance, until we reach the great open *Sertão*, where dry and wet seasons are sharply divided, and hardly any rain falls from June to November. Even on the Lower Tocantins there is a long, dry season: “It did not rain for three months,” we read in Mr. Wallace’s book. We shall study the *Sertão* and its seasons in their proper place; it will be enough now to remember that wet and dry seasons there depend on the position of the sun. When it is south of the line, the *Sertão* atmosphere is warmer than the trade-wind, and the rains do not fall; when it is on the northern side, there are ascending currents and heavy rains. But near the equator this change is hardly felt, and to the westward the cooling winds come all through the year from the Andes.

It is well for us to note these modified regions—the lee of the Guiana highlands, and edges of the *Sertão*. But they are only little fragments of the great plain; for the rest it is rain, rain, almost every day—often five or six times in a day—drizzling, pouring, filling up the river-channels, staining the sea beyond. You must not look for a dry season on the Upper Amazons or at Pará; the so-called dry and wet seasons are only marked by lighter or heavier showers. “It rains every day, or it rains all the while,” says a voyaging friend of mine.\*

At Obidos the whole Amazonian flood is gathered into

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\* Galt found 110 inches, by rain-gauge, during one year on the Upper Amazons.

a narrow trough, through which it rushes with mill-race swiftness ; even along the shores it is difficult to force vessels against it. This channel at Obidos is little more than a mile wide,\* but it makes up for that by its great depth. Lieut. Herndon sounded it, rather unsatisfactorily : “ In what was pointed out as the deepest part I sounded in one hundred and fifty, one hundred and eighty, and two hundred and ten feet, with generally a pebbly bottom. In another place I judged I had bottom in two hundred and forty feet, but the lead came up clean. It is very difficult to get correct soundings in so rapid a current.” Wallace found that this current ran four miles per hour in the dry season. Taking these two observations of Herndon and Wallace as our basis, we can venture on a calculation of the amount of water that passes through the strait. With a width of six thousand feet, we may allow an average depth of forty feet—a very low estimate. This would give two hundred and forty thousand feet for the water which is opposite a given foot of space at any one instant. Mr. Wallace’s observation was made, no doubt, in mid-stream ; along the banks, and at the bottom, the current is slower. Allow but two and one-quarter miles per hour for the average, that would give over three feet per second, or seven hundred and sixty thousand cubic feet per second in the whole breadth. Von Martius and Wallace, it is true, calculated but five hundred thousand feet per second ; but they must have underestimated the depth. Below Obidos, the Amazons receives the Tapajós, Xingú, and other smaller tributaries ; but collectively they can hardly add more than one hundred thousand feet per second. On the whole, if we say that eight hundred and fifty thousand feet per second pass

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\* 1,892 metres, according to Sr. D. S. Ferreira Penna : *A Região Occidental da Província do Pará*, p. 141.

into the ocean by the northern mouth, we are quite within bounds. That is double the outflow of the Mississippi.\*

The difference in rainfall is great enough to produce a yearly rise and fall of the river. From December or January to June the winds are stronger, and the cold currents from the West more numerous; every fisherman knows the *vento da cima*—"wind from up-river"—which brings rain almost always, and with it an increase of volume in the river. The rise and fall vary a good deal with the locality and with different years. On the Upper Amazons, about Teffé, there are, in fact, two floods,† corresponding to what may be called two rainy seasons. The first is in November and December, when the showers are somewhat heavier and the river rises fifteen or twenty feet above the summer level; after that there is a fall of four or five feet before the great rainy season, the one that is felt all over the valley. Perhaps this fall in December is caused by dry weather below the Andes; for Lieut. Herndon, careful collector of facts, has recorded this in Peru: "There is a period of fine weather from the middle of December to the middle of January, called *El Verano del Niño*, or the summer of the child, from its happening about Christmas. The streams which are fed from the rains of this country invariably stop rising, and fall a little after this period."‡

At Teffé the highest water is in June: forty-five feet, says † Bates, above the summer level, but it varies with different years; after this the fall continues into October. But here,

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\* Wallace, on a basis of seventy-two inches per annum, calculates the rainfall of the whole valley at one million five hundred thousand cubic feet per second, and he supposes that half of this is evaporated. This gives nearly the same result.

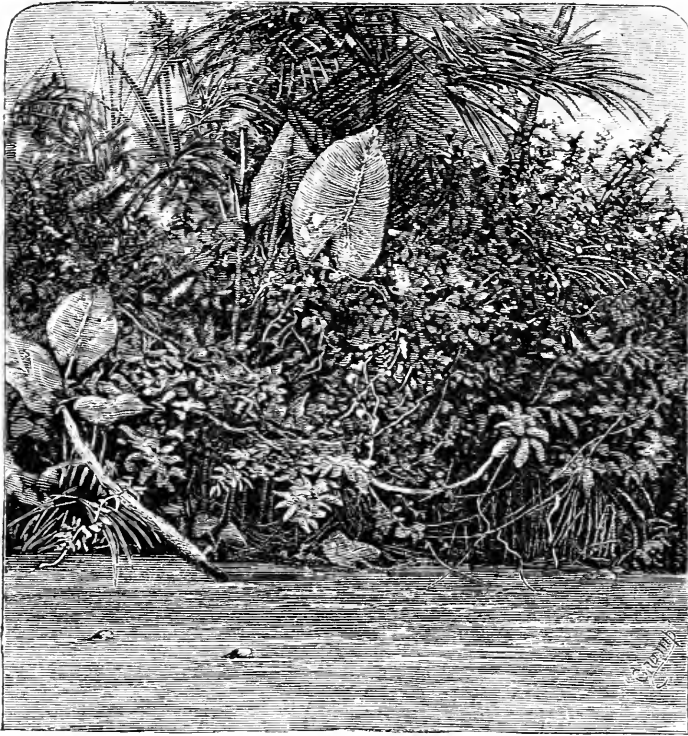
† Bates: *Naturalist on the Amazons*, p. 326.

‡ *Valley of the Amazon*, Part I., p. 112.

and elsewhere on the upper rivers, there are *repiquetes*—little floods—when the waters increase a few inches only; these seem to be caused by the sudden rising of one or two tributaries. The great river spreads its arms over such a vast territory that there may be a rainy season about the head-waters of one, while the others are still low.

On the Lower Amazons, however, the *repiquetes* are not felt, and the two floods of November and February are

hardly separated. Moreover, on the broad lower reaches the rise of water is not so great; for while it may be sixty feet on the Purús,\* and forty-five feet, as we have seen, at Teffé, we shall hardly



River-side Vegetation.

find it over thirty-five feet below Obidos. The seasons and the floods are very fickle and irregular,—much to the discomfort of the Indians, for their yearly fish and turtle harvests depend on this annual rise and fall.

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\* According to Brown and Lidstone: Fifteen Thousand Miles on the Amazon, p. 427.

The Amazonian floods are not at all like the freshets that immerse Albany streets, or burst through the levees in Louisiana. Those are caused by melting snows; but this tropical river-pulsation is entirely dependent on the rains; the flood comes on gradually, and the water passes off by slow degrees.

Wet or dry season, the temperature is much the same all over the valley, and by no means a scorching equatorial heat such as you may imagine. At Pará, it is true, people complain of the sultry days, but you shall see a dozen more sultry ones during any August in New York; 90° Fahrenheit is about the highest temperature of sunny afternoons,\* and the evenings are delightfully cool.

Now, concerning the healthfulness of the river-valley, that is a question with two sides. I can take you from Pará to the Andes, along the main river, and you will never have so much as a headache; you can ascend some of the tributaries, and in a week you will be shivering with ague. In general, it may be said that the Amazons region is very healthy; the exceptions are in lowland swamp-forest, and far up the branch-rivers, among the rapids. Certain rivers, too, are healthy during some years, but unhealthy at other times; I have found this on the Tocantins, the Xingú, and other branches. Chandless, writing from the Purús in 1865, says: "It is now very healthy, but some eight years ago fever was so prevalent and severe one season that the following year four or five men only ventured up the river." If two hundred fever-stricken men are sent down from the Madeira Railroad, it

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\* 92° or 93°, says Bates; but Lieut. Herndon's table, made in April, shows nothing above 86°. In the absence of exact data I give the mean. At Manaus, in a series of hourly observations taken through many years, the highest temperature noted was 95° Fahr., and the lowest 68°.



is hardly fair to judge the whole valley by their account. The railroad is located near the great Madeira Rapids, precisely the most sickly spot on that river; and the men were half-starved besides. I wandered for four years on the Amazons, and never had the ague at all; I caught it in three days on the Ohio. People live to old age, and are hale and hearty with their gray hairs. You hear sometimes of the "enervating" climate, but even that bugbear is largely imaginary. The white race is lazy here, not because of the climate, but from its own immorality and decay. American residents can and do work as well as in the United States, and they stand the strain better. The only "enervating" effect I ever experienced was a slight lassitude on returning to the changeable northern climate; but that soon passed away.

To the river-people the floods are a yearly "ebb and flow"—*vasante* and *enchente*. But on the Lower Amazons there are true ebbs and flows—the regular twelve-hourly tides. Of course, you would look for tides about a river-mouth. But the Amazons is not content with this: it has appropriated to itself a part of the ocean movements, and you find them away up in the fresh water five or six hundred miles from the sea. They are modified by the annual rise: during the flood season tides are hardly felt above the Xingú; but in August and September they are quite distinct at Obidos and on the Lower Tapajós. Bates found them on a secondary branch of the latter river, five hundred and thirty miles, as the channels run, from the sea. On the main Amazons they do not stop the current, but retard it; only through the little side-channels the water is forced back very perceptibly, and canoemen take advantage of this ebb and flow in their voyages.

You will understand, of course, that the salt water never comes up so far ; on the contrary, it hardly enters the river-mouth at all. At Pará, even in the height of the dry season, the river is only slightly brackish, and outside of the islands of Caviana and Mexiana it is still quite fresh. I suppose that the up-river tide is simply caused by the damming up of the current below ; or in part it may be a kind of wave, a back-water from the sea, as pebbles thrown into a pond will send circles to the very brim.

Near the mouth this wave is very apparent. The tide is forced, so to speak, into a funnel, over shoals and against the descending current ; it rises in a great solid mass three or four feet high, uprooting trees along the banks and breaking canoes that may happen to be in shallow water. This is the celebrated *pororóca*,\* a phenomenon which is best seen on the northern side of the river, and during the spring tides. Travellers have had much to say of the *pororóca*, and some of them, no doubt, have multiplied it in their fancy. However, the tidal wave is really formidable, and much dreaded by the canoemen, who keep in mid-channel to avoid its force.

The tides below and the river-floods above must spread themselves through a hundred courses, in every possible direction, for the Amazons is not so much a single river as a network of large and small channels. Generally we find a main stream—sometimes two—with smaller ones on either side, with islands and swamps and lakes innumerable, forming that great labyrinth to which Brazilians give the name *varscas* ; geogra-

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\* Wallace : Travels on the Amazon and Rio Negro, p. 129 : La Condamine, etc. The name comes apparently from *pororóg*, Tupi-Guarany : the noise caused by breaking or bursting.

phers call it the flood-plain of the Amazons. It is perfectly flat, never raised more than a few inches above high-water level, and everywhere the islands are formed of silt and mud from the river itself. The flood-plain varies greatly in out-



Flooded Forest of the Upper Amazons (from Keller).

line, and there are long projections of it where the tributaries come in. From Manáos to Marajó it may have an average width of thirty miles or more.

Now, this great band, running across the continent, is a world in itself, with trees and flowers, with quadrupeds, and birds and insects, all different from those of the *terra firme* on either side of it. It is well for us to understand in the outset this first division of the land, because it is the most striking and the most important one of all. By and by, when we come to study the lowlands, we shall have long rambles to take over the meadows and in the shore woods; we must force our way through swampy jungle, and float in canoes among the shady by-channels and shallow lakes.

In March and April the river has overflowed the varzeas, so that hardly a dry spot is left; the valley is like a great lake with deeper channels marking the water-courses, and only the submerged forest and floating grass to indicate islands and meadows. Towards the Atlantic this flooded land occupies an area as broad as New England, and the channels are even more tangled than above.

The school geographies, I remember, used to tell us that the mouth of the Amazons was one hundred and eighty miles wide. There was some reason in this, with a great deal of error. If we allow that the mouth extends from the northern side of the northernmost channel to the southern side of the Pará, then the geographies are right. But the Pará is properly a continuation of the Tocantins, and Marajó, the great tract included in this measurement, is not a delta island at all. It is true that nearly the whole of it is formed of river-silt; but there is a framework of higher and older land, with rock-formations and *terra-firme* forest, as at Breves. This older land forms a strip, or rather a series of strips, along the southwestern side of the island, and adjoining the net of channels by which the Amazons is connected with

the Pará. In these channels the tides ebb and flow ; but the general current, no doubt, is from the Amazons to the Pará. So, even in the dry season, the volume of water received by the latter river in this way may be greater than that of the Tocantins, and in the winter the proportion is increased. But, in any case, the amount is very small compared to the great flood which is poured out of the Amazons on the northern side of Marajó. Besides, the Pará flows almost north, and right in the course of the Tocantins ; so we may consider it as an estuary mouth of the latter, receiving also the Guamá and its branches, and increased by this contribution sent in through the Breves channels. It has a fair claim to Amazonian honors ; but, allowing this, I cannot see why Marajó, a tract as large as the State of New York, should be reduced to the rank of a mere “ island in the mouth of the Amazons,” nor why the great river should be forced to open its mouth a hundred and eighty miles to choke itself with such a morsel.

The Pará itself is thirty miles wide, but it does not stain the sea to a very great distance. North of Marajó the main mouth is about sixty miles across, and much broken by islands ; the principal channel below Macapá is ten or twelve miles wide.\* This part of the river is much obstructed by shifting sand-bars, and the fierce currents make it a dangerous entrance for ships ; so I suppose that the Pará will be the commercial mouth of the Amazons as long as the world lasts.

Farther up, the river is deep enough ; fifteen or twenty fathoms, even near the banks, and in the middle it is not easy to sound. The current is swift and steady ; the river, in

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\* According to the map of Tardy de Montravel.

mass, appears yellowish brown ; but, on the surface at least, it is not a muddy stream like the Mississippi ; if you dip up the water in a glass it will deposit hardly any sediment, and even during the floods it is excellent for drinking. On the Amazonian steamboats, river-water is always kept in great porous jars, for the benefit of passengers.

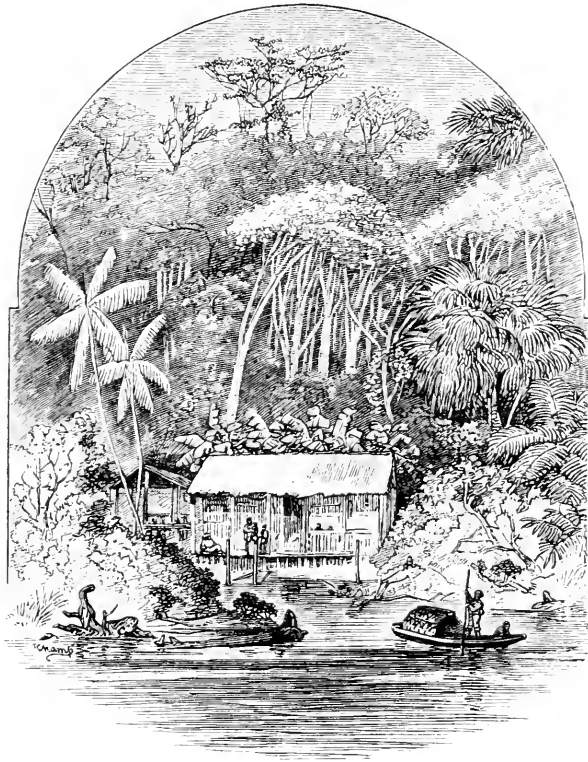
The river is full of varzea islands, as we have seen. The main channel may be seven or eight miles wide, as near the mouth of the Xingú, but oftener it is only two or three miles. The bends are seldom very sharp ; so you can look up and down to open horizons, where the lines of forest are lifted up by the mirage, and broken into groups and single trees until they disappear altogether : it is like going out to sea.

Above the narrow strait at Obidos we find again an average breadth for the main channels of two miles or more ; Herndon tells of sounding in from seventy-five to one hundred and fifty feet of water ; and away up to Nauta there is yet a navigable channel with six or seven fathoms, and with a current of two and a half or three miles per hour.

It is a wild region, this of the *Alto Amazonas* ; a shade more savage, even, than the eastern portion of the valley. The villages are very few, and most of them are mere collections of Indian huts, a dozen together. Only after we pass the Peruvian frontier the population begins to increase a little toward the Andes ; once in ten or fifteen miles there may be a hamlet crowded against the river banks ; but within there is only the unbroken, rayless forest—a solitude that can be felt.

Tabatinga, on the Peruvian frontier, is only two hundred feet, it is said, above the Atlantic. It is difficult, however, to compute the slope of the river-plain. Agassiz supposed that the fall was one foot in ten miles ; Orton gives one foot

in five miles, which is probably nearer the truth. But barometrical measurements in this region are not very reliable. Herndon suggests an explanation: "I am led to believe that this irregularity arises from the fact that the trade-winds are dammed up by the Andes, and that the atmosphere in those parts is from this cause compressed, and consequently heavier than it is farther from the mountains." He may be right in part; but the amount of moisture in the air is a more important element of error. We cannot measure it, for the heaviest layers are high up out of our reach.\* We know, at any rate, that the fall of the river is very slight, and it may seem strange that the current should be so rapid. But a river may run, even on perfectly level ground, if there is a constant



On the Banks—Lower Amazons.

supply of moisture about its head; just as in a trough, which may be exactly level, if water is poured in at one end, it will run out at the other end in a constant stream.

Above Nauta, however, the slope increases rapidly, and

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\* Chandless makes the mouth of the Purús one hundred and seven feet above the Atlantic; Keller gives twenty-one metres for the level of the Madeira embouchure.

then there is that long south-to-north course where the river rushes and foams down the rocky valley from its lake-cradle in the Andes. It is little more than a pond, this lake of Lauricocha; the hills around are bare and bleak to the snowy Cordilleras that feed it.

Fragments of pumice-stone float down from the Andean volcanoes, and are picked up even on the shores of Marajó. Melting snows swell the volume of water; granite and gneiss and slate from the mountains have been washed away to form these varzea islands, to build up the sea-bottom half-way to the West Indies.

Long ago Pinçon told of a fresh-water sea which he had found on the South American coast, where, it is affirmed, he filled his water-casks while yet he could not see the shore.\* Pinçon's voyage was made in 1500, and he discovered this fresh water about March of that year—*i. e.*, during the flood season; so we may suppose that he actually did find fresh water far outside of the river-mouth, though we may doubt the forty leagues which Herrera and others credit. Probably he had sailed about forty leagues from his last landing-place, but in a line almost parallel to the coast.

A wonderful sight it must have been to the explorer and his company. They dipped up the yellow water for their casks, but all around there was clear horizon—never a tree or a sandbar. It is written, however, that “wishing to know this secret, he approached the land; and there were there many beautiful and verdant islands, with much people, who received the sailors with as great love as if they had always known them.” With true Spanish brutality they rewarded the faith of these simple-hearted savages. “Not finding

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\* Herrera: *Hist. Gen. de las Indias*, Tom. I., p. 90; J. C. da Silva: *L'Oyapoc et l'Amazone*, vol. ii., ¶ 2530-2583.



provisions in this place, they took away with them thirty-six men, and so sailed on to Paria."

These were the first tidings of the mighty king-river. It is interesting to read in the "Capitulation" of Pinçon, how "with the help of God our Lord, and with your own industry and labor and diligence, you discovered certain islands and main land; and from thence you followed the coast, which runs to the northeast, to the great river, which you called Saint Mary of the Fresh-Water Sea—*Santa Maria de la Mar Dulce*."\*

This was the first name given to the river, except that older and better one of the Indians, *Paraná*, the sea; afterwards it was *Marañon* and *Rio das Amazonas*, from the female warriors that were supposed to live near its banks. Yet for the moment we will draw Pinçon's name out of its oblivion and let it stand in our chapter.

After Pinçon's time, there were others who saw the fresh-water sea, but no one was hardy enough to venture into it. The honor of its real discovery was reserved for Francisco de Orellana; and he explored it, not from the east, but from the west, in one of the most daring voyages that was ever recorded.

It was accident, rather than design, that led him to it. After Alonzo Pizarro had conquered Peru, he sent his brother Gonzalo, with three hundred and forty Spanish soldiers and four thousand Indians, to explore the great forest east of Quito, "where there were cinnamon-trees." The expedition started late in 1539, and it was two years

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\* Capitulation de Vincent Pinçon. This curious document was copied from a manuscript in Madrid, and first published by Sr. J. C. da Silva, as an appendix of his *L'Oyopoc et l'Amazone*—a work, I may add, which shows an amount of research not at all common with Brazilians.

before the starved and ragged survivors returned to Quito. In the course of their wanderings they had struck the river Coco; building here a brigantine, they followed down the current, a part of them in the vessel, a part on shore. After awhile they met some Indians, who told them of a rich country ten days' journey beyond—a country of gold, and with plenty of provisions. Gonzalo placed Orellana in command of the brigantine, and ordered him, with fifty soldiers, to go on to this gold-land, and return with a load of provisions. Orellana arrived at the mouth of the Coco in three days, but found no provisions; “and he considered that if he should return with this news to Pizarro, he would not reach him in a year, on account of the strong current, and that if he remained where he was, he would be of no use to the one or to the other. Not knowing how long Gonzalo Pizarro would take to reach the place, without consulting any one he set sail and prosecuted his voyage onward, intending to ignore Gonzalo, to reach Spain, and obtain that government for himself.” \*

Down the Napo and the Amazons, for seven months, these Spaniards floated to the Atlantic. At times they suffered terribly from hunger: “There was nothing to eat but the skins which formed their girdles, and the leather of their shoes, boiled with a few herbs.” When they did get food they were often obliged to fight hard for it; and again they were attacked by thousands of naked Indians, who came in canoes against the Spanish vessels. At some Indian villages, however, they were kindly received and well fed, so they could rest safely while building a new and

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\* Garcilasso Inca de la Vega: *Royal Commentaries*. Translation published by the Hakluyt Society. Herrera, however, supposes that Orellana may have continued the voyage with Gonzalo's permission.

stronger vessel. Think what a picture these iron-clad soldiers must have made, with the naked Indians about them and the great rolling forest behind.

On the 26th of August, 1541, Orellana and his men sailed out to the blue water, "without either pilot, compass, or anything useful for navigation; nor did they know what direction they should take." Following the coast, they passed inside of the island of Trinidad, and so at length reached Cubagua in September. From the king of Spain Orellana received a grant of the land he had discovered; but he died while returning to it, and his company was dispersed.

It was not a very reliable account of the river that was given by Orellana and his chronicler, Padre Carbajal. So Herrera tells their story of the warrior females, and very properly adds: "Every reader may believe as much as he likes." Of these Amazon women, more anon; whether they existed or not, they did not mix in white-race affairs, so we may dismiss them for the present.

Lope de Aguirre's voyage, in 1561, has some similarity to Orellana's. He was one of those who followed Pedro de Ursua in his search for Omagua and El Dorado. They came down the river Huallaga to the Amazons, and there this Lope de Aguirre and others conspired against their chief, and murdered him; elected Guzman to the command, and murdered him also; finally, formed themselves into a piratical band, the "Marañones,"\* threw off allegiance to Spain, and continued their search for El Dorado to the eastward. It appears that they followed down the Amazons to the Negro, and ascended that river to the Casiquiare canal, ✕

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\* Whence, perhaps, the name of the river, Marañon or Maranhão; but it is more probable that the word comes from the Tupi *paraná*.

✕ In course of, they reached the sea by the Amazon and thence coasted to Venezuela.  
J. B. C.

and so to the Orinoco ; by this latter stream they reached the sea. Their whole journey was marked by savage murders, cruelty of every kind, brutality beyond parallel, even in the Spanish chronicles. "Traitor Aguirre," and "tyrant," the historians call him ; I wish that the hangman had found him before ever he left Peru. "It was noticed," says Padre Simon, "that he was growing morose because many days had elapsed since an occasion had offered to kill any one." \*

Lope sent a letter to King Philip of Spain—one of the most remarkable documents, in its way, that was ever produced ; and in the matter of strong language it would be hard to match it :

"I take it for certain," remarks this robber, "that few kings go to hell, only because they are few in number ; but that if there were many, none of them would go to heaven. For I believe that you are all worse than Lucifer, and that you hunger and thirst after human blood ; and further, I think little of you, and despise you all, nor do I look upon your government as more than an air-bubble."

Aguirre's description of his voyage, in this letter, is a pithy résumé of it :

"They named me Maestro del Campo, and because I did not consent to their evil deeds, they desired to murder me. I therefore killed our new king, the captain of his guard, his lieutenant-general, four captains, his major-domo, his chaplain who said mass, a woman, a knight of the order of Rhodes, an admiral, two ensigns, and five or six of his servants. It was my intention to carry on the war, on account of the many cruelties which thy ministers had committed. I named captains and sergeants ; but these men also wanted to kill me, and I hung them.

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\* Primera Parte de las Noticias Historicas de las Conquistas de Tierra Firme. Translated and published by the Hakluyt Society.

We continued our course while all this evil was befalling us, and it was eleven months and a half before we reached the mouth of the river, having travelled for more than a hundred days, over more than fifteen hundred leagues. This river has a course of two thousand leagues of fresh water, the greater part of the shores being uninhabited; and God only knows how we ever escaped out of this fearful sea. I advise thee not to send any Spanish fleet up this ill-omened river; for, on the faith of a Christian, I swear to thee, O King and Lord, that if a hundred thousand men should go up, not one would escape."

In a contradictory mood he finishes :

"We pray God that thy strength may ever be increased against the Turk and the Frenchman, and all others who desire to make war against thee; and we shall give God thanks if, by our arms, we attain the rewards which are due to us, but which thou hast denied us; and, because of thine ingratitude, I am a rebel against thee until death.

(Signed)

"LOPE DE AGUIRRE, THE WANDERER."

Fortunately, the madman and his crew were defeated in a battle with the royal forces; on this he killed his own daughter, "that she might not be pointed at with scorn as the daughter of a traitor;" and then gave himself up ignobly, when, as I am glad to learn, he was immediately put to death. Will-o'-the-wisp lights flicker on the llanos: the country people cross themselves when they see these reddish flames—"the soul of the traitor Aguirre."\*

Pará had already been founded, in 1616, when two monks of the Order of San Francisco came down the river. They had been driven from the Peruvian missions by savage Indians; they floated down in a canoe, with fear and trembling, "like persons who were each day in the hands of death." From Pará these monks went on to Maranhão, where they

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\* Humboldt: Reise.

persuaded the governor, Noronha, to explore the river and carry them back to Peru. Pedro Texeira was chosen to command the expedition; he set out in 1637, with over forty canoes, containing seventy Portuguese soldiers and twelve hundred Indians, with women and boys,—in all, two thousand persons.

Not all commanders are so well chosen. This man Texeira was gifted with prudence and wisdom; but withal he was bold and persevering—just the man to carry a great expedition through an unknown country. The Indians deserted him; his soldiers would have turned back; only his skill and tact kept them from open mutiny. Benito Rodrigues was sent ahead as pioneer; the captain followed in his track, and so, after a whole year, they all reached the Spanish settlements in Peru. Texeira left the canoes in command of trusted officers, and went on to Quito.

At that time Portugal and its possessions were united to Spain; the Spanish viceroy, therefore, received Texeira with open arms, and not a little surprised he must have been at such a wonderful adventure. When Texeira returned, in February, 1639, a Jesuit priest was sent with him as a chronicler; this was Pedro Cristoval de Acuña, to whom we owe our first intelligible account of the river.

I, for one, respect the old writer most thoroughly. One wades through scores of rubbishy books on Brazil, and this simple, vivid story shines forth a light in the darkness. I keep my *Nuevo Descubrimiento*, with Bates, and Wallace, and Penna, for constant reference. It is true that Acuña gives credit to certain Indian fables, but he always presents these reports as such; and I cannot wonder at his faith in them, remembering that the whole region was a *terra incognita*, which rumor had already peopled with El Dorados,

and dwarfs, and one-eyed men. Now, when all men believe a thing, it is human nature to add our belief to that of all men, be it for graveyard ghosts or the atomic theory. If a hundred million Christians believed that the moon was made of green cheese, you and I would believe it too.

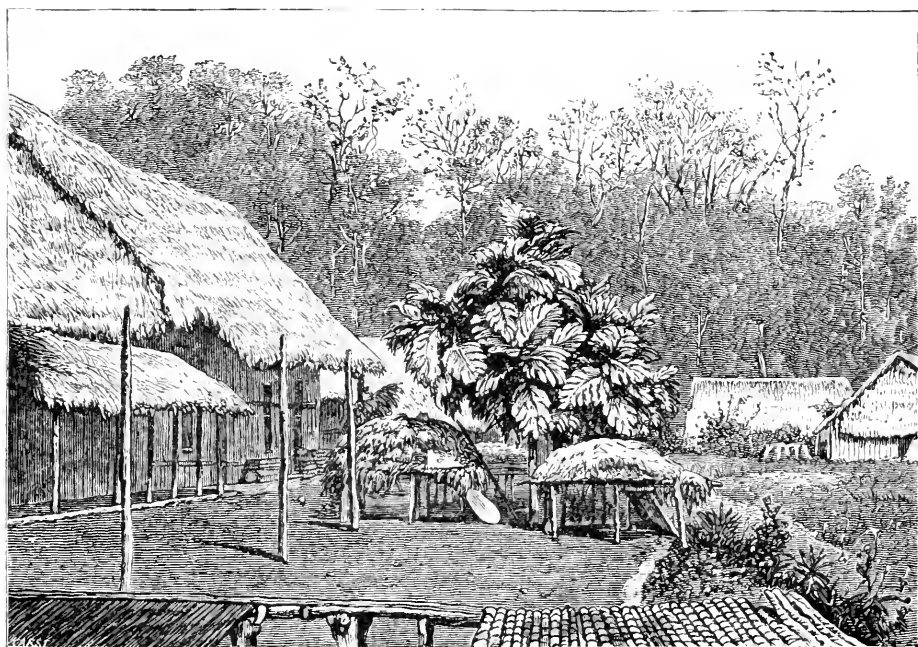
Acuña does not fall into many errors. He speaks much of the tributaries, of the channels and islands, of the forest and the fertile soil; and dwells strongly on the importance of the Amazons as a highway across the continent: I hope his dreams may be realized yet. One can sympathize with the enthusiasm which writes: "The river has rich reward for all who will come. To the poor it offers sustenance; to the laborer, a return for his work; to the merchant, employment; to the soldier, a field of valor; to the rich, yet greater riches; to the noble, honors; to the powerful, estates; and to the King himself, a new empire."

Acuña and the others found a host of Indian villages along the banks, so close together in some places that they formed a continuous line. "They are engaged in constant wars, in which they kill and take prisoners great numbers of souls every day. This is the drain provided for so great a multitude, without which the whole land would not be large enough to hold them." However, I think that the most of this population was close to the river-banks; the deep forest was as wild as it is now, with only half-animal roving Indian families.

The Indians found worse enemies than their own neighbors: Portuguese slavery on one side, Spanish bloodhounds and arquebuses on the other; fighting bravely, or submitting as they might, they were swept away by thousands, until the land was left desolate. Already in Acuña's time, Benito Maciel was enslaving them on the Tapajós; the Jesuit

cried against this wickedness, as Jesuit missionaries cried for a century after, until they were driven out of the country. They were heroes, these priests ; bigots, I grant you, but their great hearts rose above it all ; even the wild savages respected them. The Amazons, to this day, would be as impassable as Central Africa, but for the Jesuit missionaries—man-tamers and peace-makers worthy of their martyrdom.\*

The villages, now, are few and far between ; but there are good and gentle people in them, white or brown. They



Indian Settlement.

are close to the river-banks ; within there is only the thick wood, without roads, without paths even—the largest forest in the world. Suppose we allow two millions five hundred thousand square miles for the valley, the highest possible es-

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\* The Jesuits taught in the *lingua-geral*, a somewhat corrupted form of the Tupi. For a long time this language was used almost exclusively on the Amazons, but it is now supplanted by the Portuguese, in most places.



timate of the population will give one million souls—two for every five square miles. The province of Alto Amazonas contains, in round numbers, seven hundred and fifty thousand square miles, and the whole registered population is hardly fifty-five thousand; add to this the wild Indians, and we may possibly have one hundred thousand—one for seven and one-half square miles, and these few are gathered in villages, little specks in the wilderness.

Imagine, if you can, this matted forest—this maze of columns, and branches, and leaves, and looping vines. Imagine a region where you must cut your path right and left; where sunshine hardly reaches the ground; where man is an intruder—an insult, almost, to the solitude. There is no desert like this, for in the great plains of Asia and Africa you can look about and know if there be other human beings near you; here, you could be but half a mile from one of these tiny villages—and you starving withal, blind to your safety, invisible to the world.

You have heard that marvellous story of Madame Godin des Odonais: how she wandered alone through these forests, and yet was saved, as by a miracle. Twenty years she had been parted from her husband; his letters to her had been lost by the faithlessness of a messenger; she, in Quito, only knew of a Portuguese boat which was waiting on the Upper Amazons to convey her to him at Cayenne.

Remember, this was in 1769, when even the mission-stations were very few. The route is difficult now, even for strong men; but this Frenchwoman braved it when the attempt must have seemed like madness. Her father went before, to have men and canoes ready for her at each station, and she followed down the Bobonassa branch in a boat, with several persons. Two of these were her brothers, and there

was a nephew of nine or ten years, with a French physician who was travelling the same way ; for servants she had a negro man and three women. Her father had arranged for their embarkation at Canelos, but meanwhile the small-pox had appeared there, and the Indians had left the place. So here they could get no crew, and the Peruvians who had come over the mountains with them would go no farther—deserted them in their sore need. Still, with two men who remained at Canelos, they ventured to embark ; but on the third morning these two deserted them also, and they had to go on without a pilot. The Bobonassa is full of rapids ; as might have been expected, their boat was presently upset, and the party was obliged to land. After that Madame Godin and her brothers resolved to remain on the bank, while the French physician and her negro slave went on to Andoas ; the Frenchman promised to send back a properly manned canoe for them within two weeks. Those who remained built a hut, and waited vainly for twenty-five days.

Then, “giving up all hope, they constructed a raft, on which they ventured themselves with their provisions and property. The raft, badly made, struck against a sunken tree ; all their effects were lost, and the whole party was thrown into the water. Thanks to the narrowness of the river at this place, no one was drowned, Madame Godin being happily saved after twice sinking. Placed now in a more terrible situation, they resolved to follow down the banks of the river. They returned to their hut, took what provisions they had left behind, and began their journey along the river-side. They found that its sinuosities greatly lengthened their way ; to avoid this they penetrated the forest, and in a few days lost themselves. Wearied by so many days’ march through the midst of woods, their feet torn by thorns and brambles, their provisions exhausted, and dying of thirst, they seated themselves on the ground, too weak to stand, and waited thus the approach of death ; in three or four days they expired, one after another. Madame Godin, stretched on the ground by

the corpses of her brothers, stupefied, delirious, and tormented with choking thirst, at length assumed resolution and strength enough to wander on. Such was her deplorable condition, that she was without shoes, and her clothes all torn to rags ; she cut the shoes off her brothers' feet, and fastened the soles on her own. It was on the ninth day after she left this place when she reached the banks of the Bobonassa ; she assured me that she was ten days alone in the woods—two awaiting death by the side of her brothers, the other eight wandering at random. On the second day's march, the distance necessarily inconsiderable, she found water, and the succeeding day some wild fruit and fresh eggs—of what bird she knew not, but by her description I judge that it was some kind of partridge ; she ate them with the greatest difficulty, her throat being so parched and swollen ; but these, and other food she accidentally met with, sufficed to support her skeleton frame."

When at length she reached the river, by the merest accident she encountered two Indians who were just launching a canoe from the bank ; they took her to Andoas, whence she finally reached the Portuguese vessel at Tabatinga, and was conveyed to her husband.

"The remembrance of the terrible spectacle, the horror of solitude and the darkness of night in the desert, had such an effect on her mind that her hair turned gray."\*

Since Madame Godin's time the forest has been traversed again and again, the river has been explored and re-explored by a host of distinguished travellers, but to this day the country is as wild as she saw it. A few more villages there are ; a few more people in the old ones ; but far in the interior there are great tributary rivers of which we know nothing—Indian tribes who have never seen a white face.

After La Condamine's time came Martius, studying the

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\* Letter from M. Godin des Odonais to M. de la Condamine, published by the latter.

plants—" *meine Freunde*," he said ; sweet flowers and noble forest-trees, and waving grasses ; he wrote beautiful prose poetry about them. The Englishmen, Smythe and Mawe, and the Prussian, Poepig, explored the Upper Amazons ; D'Orbigny travelled on the Madeira, and Castelnau on the Ucayale ; Tardy de Montravel mapped the Lower Amazons ; and with these we come to the explorers of our own day.

I have already spoken of Mr. Bates and his book. This gentleman was an English naturalist, who came to the Amazons in 1848, and lived in the river-towns for eleven years. Of course, he had far better advantages for studying the country and the people than a mere transient traveller ; his book is really invaluable for its descriptions, which are, besides, very readable. Mr. Wallace, who came with Mr. Bates, travelled at first in his company ; subsequently he explored the Rio Negro and its affluent the Uapés, and gave us much reliable information about a little known region.

In 1850 the United States Government sent two naval officers, Lieuts. Herndon and Gibbon, to explore the Amazons valley. Herndon examined the Peruvian tributaries ; Gibbon visited the Bolivian ones, and the reports of both were subsequently published at Washington. They are crowded with information, reliable in most cases, but not very well digested. Agassiz' expedition is too well known to need comment. Mrs. Agassiz wrote a clever narrative of the voyage, but, beyond a few scientific papers, the results of the Amazons survey have never been published. Prof. Orton's book is comprehensive, but very unreliable ; for my part, I would far rather trust the much older American book of Mr. Edwards, which has no greater fault than the bad spelling of Indian and Portuguese words.

One other American remains to be noticed. Prof. Hartt

came to the Amazons in 1870, and again in 1871. He explored less and studied more—studied as few have the power to study, with marvellous acuteness and accuracy. There is hardly a superfluous word in his writings; alas that there are so few of them! He died, before his work was half done, a victim of yellow fever at Rio de Janeiro.

The Englishman, Chandless, merits hardly less praise; to him we owe the careful explorations of the Purús and Juruá, and a survey of the Tapajós through its whole length. A brave traveller he was, and a modest; one would be glad of something more than his few papers in the Proceedings of the Geographical Society.

Of Brazilian explorers, there are three modern ones who especially deserve attention: Penna, Barboza Rodriguez, and Coutinho. The first is a gentleman of Pará, who has often been employed by the provincial government for the examination of various districts; his reports are good and very reliable. Dr. Barboza Rodriguez is a well-known Brazilian botanist, who was commissioned by the imperial government to collect and study plants. As an explorer he was enterprising and persevering; as a writer he would be valuable if he confined himself to facts: his absurd theories and constant quarrels with other authorities have hidden the real value of his work. Coutinho is a government engineer, who has travelled all over the Amazons valley; readers of Mrs. Agassiz's book will remember how he was chosen to accompany the professor and his party. Coutinho's reports are not voluminous, but some of them are very good.

One of the Brazilian Government explorations was placed in charge of Franz Keller, a German engineer. On his return to Europe this gentleman published a book, which was subsequently republished in English. "The Amazons and

the *Madeira River*” is very readable, but its chief value lies in the magnificent illustrations from Keller’s own pencil. I might mention at least a hundred other authors who have written about the Amazons: most of the Brazilian ones are buried in government reports; the others wrote journals of travel and personal adventure, or historical notices of greater or less value. Any one who has been obliged to wade through this mass will be glad enough to be spared a rehearsal of it.

A great step in advance was made when steamboats were placed on the Amazons, in 1852. Of course, the line was run on a government subsidy; every new enterprise must have a subsidy in Brazil. But since the first one was started, independent lines have sprung up, and they have succeeded very well. At first, the river merchants declined to submit to the innovation; they shipped their rubber and *cacáo* by canoes as before, until they learned that the steamboats could take them at half the expense and in a quarter of the time; so the old canoe traffic was given up, new trading centres were formed along the river, and the steamboats became a necessity as much as they are on the Hudson.

In 1867 Brazil opened the Amazons to all flags—made it, in fact, a free highway, like the ocean. But she forgot to take away the heavier burden of her export duties, and she could not give a population to attract commerce. It was a great step in advance, but a step that will be felt in the future more than in our day. Very few foreign ships come here now; why should they come to these deserts?

Yet it is no wonder that Brazilians proudly call the Amazons the Mediterranean of America. Not alone for the main stream; the great branches spread their arteries in all directions, navigable often for hundreds of miles. And so the

great stream flows on, through the richest region on earth, yet the least known ; where tropical heats are tempered by the refreshing trade-winds, and the climate is wholesome almost everywhere ; where all nature seems to invite man to come, yet the region of all others that man has forsaken—a glorious desert, an overflowing wilderness.

Will the regeneration come soon ? Sooner than we look for, maybe. Brazil gave the signal by this opening of the river to free navigation. Bankrupt Peru dreams yet of her railroad over the Andes ; if she ever builds it, her commerce will go, not westward to the Pacific, but eastward to the Huallaga and Marañon. The Mamoré Railroad is surveyed around the falls of the Madeira. It may be abandoned for the present ; even if it is built now it will not be a paying enterprise for many years ; but some time it must become an achieved fact, and Bolivia will look back with wonder on her mule-train commerce. Colombia has had commissioners at work exploring the Ica, and steamboats have penetrated from Pará almost to her capital. These are but signs ; and in South America the march of improvement is slow. But, be it soon or late, the destiny of the Amazons is sure. Even the Darien ship-canal, if it is ever made, cannot compete with this straight, deep channel for the trade of the western republics.

## CHAPTER II.

### PARÁ.

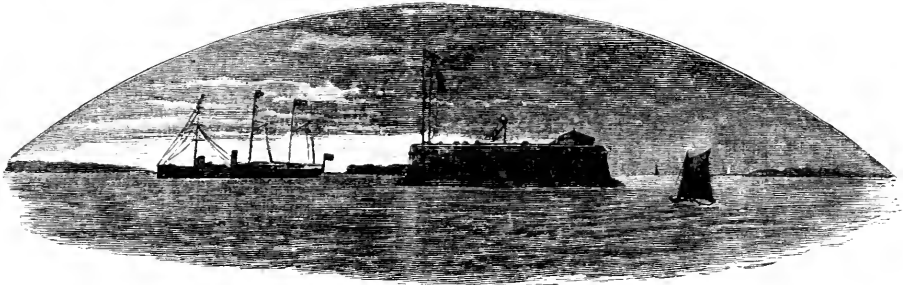
THERE are white breakers on the Bragança shoal ; wind from the northeast, and three thousand miles of ocean vigor in its puffs. It slaps the waves into foam, and showers salt spray in your face, sweeps up the beaches and away through the dark forest and over the continent to the snow-caps on the other side. Trade-wind, forsooth ! Play-wind, race-wind, wake-up-wind, pitch-and-tumble-wind ; you pace the deck and stop every minute to draw a longer breath of it. So you get your portion of life from this air, as some hundred thousand trees are getting theirs on every square mile of the great plain. Give it yet another name : life-wind. The trees are waving and nodding in the fulness of their quiet joy ; out here the surf gleams, and the gulls are whirling about in our wake, and you and I at the mouth of the Pará river are enjoying it all.

There is a line of forest to the south, with sand-beaches here and there ; to the north, only a blank horizon ; for this channel is thirty miles wide ; only far up, the shores of Marajó come in sight, another line of woods, just visible. Truth to tell, the Pará is no more a river than Delaware bay is ; it is simply the broad estuary mouth of the Tocantins. With that, and the Guamá, and what it may get from the Amazons, it



has just enough of clay-stained water to tinge the sea a little, outside of Bragança.

It is deep, and unobstructed in the main channel. The tide sweeps in and out, four miles an hour in some places ; sailing vessels must wait for it, rolling about beyond the bar. There is a queer little tub-like light-ship ; for the rest, nothing but red-sailed fishing vessels or pilot-boats, and the forest line, growing more distinct as we near it. After awhile we can distinguish a few tile-roofed buildings on the shore—brick-works, many of them, or farm-houses, with rows of cocoanut palms and bright green banana plants, and orange groves behind. The larger houses have little white chapels before them, and a cross by the water-side ; the thatched huts may belong to Indian or mulatto fishermen. Near the city the channel is narrowed by islands—and such islands ! All glorious they are with regal palms and tangled vines and tall forest trees. Then there is the little round cheese-box fort, in seeing which we speculate curiously



The Fort, Pará.

whether the big gun on the parapet would be more dangerous to a hostile ship or to the walls themselves : and we come to anchor three miles below Pará.

A city, this is, with a manifest destiny : a city of the future, that shall yet enrich the world with its commerce. Some time—who knows—it may be the true metropolis of Brazil. I can suppose that. Rio de Janeiro is far removed

from the commercial world, a good five thousand miles from New York, and farther from Europe. Pará is nearer by almost half that distance ; if it has not the harbor of Rio, it has what the southern city lacks—splendid water-communication straight through the heart of the continent ; and this valley, if people did but know it, is the richest part of South America. Pará has her title of nobility : by her situation she is queen of the Amazons.

The city looks unimportant enough from the river ; a row of white- and yellow-washed warehouses along the waterfront ; the ancient-looking custom-house ; and, rising over all, the square towers of two or three churches. Rampant swamp-forest draws close in on either side, as if it would reclaim its royal domain and bury the town in green glories ; turbid water sweeps angrily around the point, and the score or two of vessels lying before it tug at their anchors and rock uneasily. We sit on deck and watch the great purple storm-clouds piling themselves up in the eastern sky, and the sun-touched towers sharply outlined against them—purple passion-robcs for this tropic queen. And we dream of white-sailed vessels bearing to all climes the wealth of the Amazons and the Andes ; rows of stately warehouses, and pillared mansions, and parks that shall eclipse all art in their splendor of tropical vegetation. But then—so it goes with dreams—the purple clouds change to black and send down a deluge of rain over the ship, hiding our sunset towers and dissolving our air-castles.

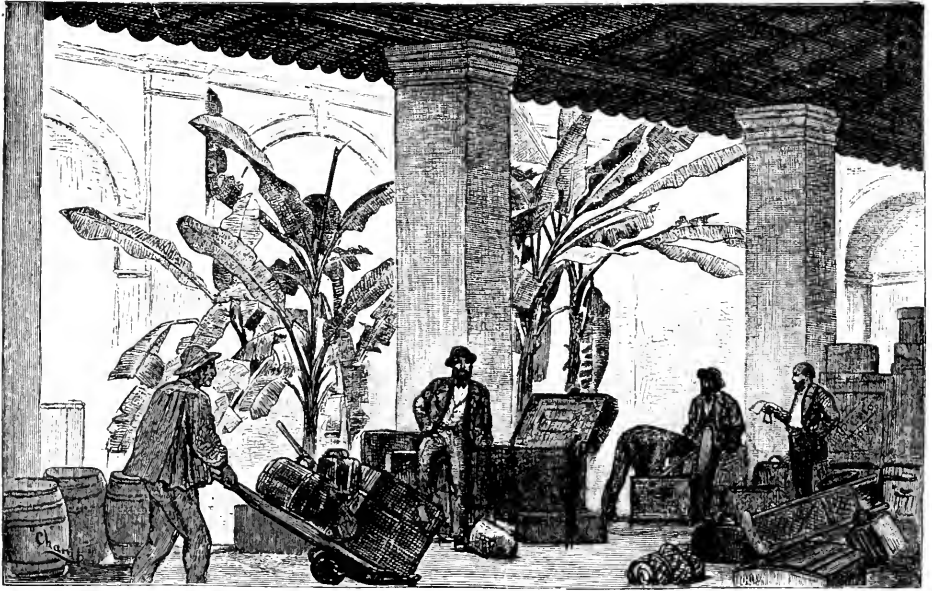
There are no piers, except the small ones of the Amazonian Steamboat Company. Freight is landed in lighters, and passengers and luggage are taken ashore in boats, whereof there is a small fleet, manned by exceedingly dirty Portuguese boatmen ; you pay from one dollar to ten, according to the

state of the tides and your own state of greenness. However, our deep-draught steamer has to anchor so far below the town that it would be a long pull for the men and the passengers' purses; so a steam-launch is arranged for us all. We leave the good *City of Rio de Janeiro* a little loath, for it has grown home-like during our voyage; we are proud of the ship as a splendid specimen of American skill, and proud of Captain Weir and his officers as American sailors and gentlemen.

We move up the river in the rich morning sunshine, landing at the custom-house wharf, where all foreign baggage must be examined. Climbing the oozy, half-ruined stairs, we pause curiously at the top to catch our first impressions of the city. There is a little pagoda-shaped building on the wharf, with sleekly dressed custom-house officials sitting by the door. Grouped around are negro porters, cartmen with red sashes about their waists, rough-looking sailors, women with trays of oranges, diminutive horses and donkeys dragging two-wheeled carts—a rich tropical picture in a glowing frame of sunshine. And now we notice that the sun makes itself felt less in heat than in light. The temperature is not oppressively high; a New Yorker, transported to Pará in August, would call it refreshing; but, blazing and quivering in the air, streaming down through every alley, flooding streets and house-tops, comes the dazzling white light. Red and yellow colors are painful; shadows are dark pits cut out of the ground, and an object in the shade is defined only by vivid degrees of blackness. It takes a long time for the eyes to accustom themselves to this superabundance of sunshine.

The custom-house is an immense stone structure with two great towers at the end, recalling its ancient glories. It was formerly a convent, but, by the decay and final extinc-

tion in Pará of the order that tenanted it, the building reverted to the government and was turned over to its present uses ; only the little chapel is still reserved for religious purposes. The walls are all blackened with mildew, and clusters of weeds grow about the tile-roof ; within, the long, dark corridors and massive pillars stand in stern contrast to the piles of barrels and boxes and crates of wine. The walls may have their dark secrets ; many a noble life has burned itself out in these old convents. But our baggage inspector does



At the Custom-house.

not concern himself about that ; he glances through his gold-rimmed spectacles with a critical eye for our trunks and valises, and brings up no pictures of gray-robed monks and penitential tears.

Speaking from my own experience, I have nothing to say against the Brazilian custom-house official, who is courteous enough, though with a consuming sense of his own importance, developed precisely in inverse proportion to his rank in the service. Some travellers appear to think that they

cannot pass the Brazilian frontier without bribing the officers. This is unjust. In all my travels I never paid out a milreis in that way, and never had occasion to. A little quiet politeness is all that is required. But then, in larger matters the custom-houses are as bad as similar establishments are the world over, and with the added stupidity of these petty officers to make them worse. Cases of dishonesty are common enough, and illegal extortion is allowed more or less all through Brazil. Probably the Pará *alfandega* is as good as any; some of its rulers, I know, are excellent men; but, even at the best, there are endless delays and troubles, and possible loss, for any one who has goods to bring through.

From the custom-house, passing the line of stately royal palms by the water-side, we stroll down the *Rua da Imperatriz*. It is a broad, well-paved street, with rows of prim-looking white and yellow buildings, two and three stories high; tall, arched door-ways, and those ugly green doors that are seen in all tropical American cities. Here the largest wholesale houses are located—orderly establishments, the counting-room and warehouse generally together on the ground floor, while the stories above may be occupied for offices and dwellings. The proprietor looks cool and respectable in his spotless white linen clothes. If we enter the store he will receive us politely, but in business hours he is not given to wasting time in words; in financial matters we will find him careful and methodical—not easily outwitted even by a Yankee. In large transactions, the Pará merchant is governed, perhaps, rather by a wholesome regard for the law than by any abstract moral reasoning. In retail business, I am bound to say that he is quite as reasonable as his northern brother. One seldom has occasion for “beating down” a shop-keeper.

On the *Rua da Imperatriz* we see nothing of that confusion of boxes and bales, carts and wagons, that characterizes a northern wholesale street. There are a few heavy carriages, but all burdens are carried on the heads of Portuguese and negro workmen, or on the ugly little two-wheeled carts. One feature which strikes us favorably is the absence of that gaudy array of projecting signs, which is such an eyesore in a northern city. Instead of being obliged to twist our necks, trying to find a name in the confusion, we see it printed in small, legible characters on the side of the white door-way, attracting the attention at once. But in the neighboring *Rua dos Mercadores* the retail stores are often covered with kalsomine patterns, got up with an artistic eye to the possibilities of ugliness, and with whole advertisements printed on them. This *Rua dos Mercadores* may be called the fashionable shopping street, though the phrase seems misapplied in a place where ladies hardly ever enter a store. During the morning hours it is very lively, and not unpicturesque. The dry-goods merchants hang bright-colored cloths and hammocks about their doors, and some of them have their shop-fronts decorated with gorgeous banners or huge gilt devices. Horse-cars (mule-cars, rather,) run through the street, and are generally well filled with pleasure-seekers going to Nazareth, or business men coming from their houses. Looking down to the *Largo do Palacio*, you see the gray cathedral towers in the background rising above the low buildings of the street.

The shops themselves are small, but well stocked; the different branches of trade occupying separate establishments, as in a northern town. The scale of prices is instructive. French broadcloths, silks and woollen goods are nearly, or quite, as cheap as in the United States; cotton

cloths, shoes, cutlery, etc., range from fifty to a hundred per cent. higher; glass and wooden wares are abominably dear; while coffee, sugar and cotton, which the country ought to produce in surplus, cost more than at home. Books and paper are high-priced and of very inferior manufacture.

But the tropical side of Pará commerce is seen in the market. We must visit it before the sun is high, for it is almost deserted later in the day. It occupies nearly a whole block; approaching on the side of the *Rua da Imperatriz* we see nothing remarkable about the exterior, which is much like the whitewashed stores around it; only, gathered about the high, arched door-way, there are groups of noisy negroes, some of them with trays of fruit which they are retailing to passers-by—piles of glossy oranges, bunches of yellow bananas and plantains, fragrant pineapples and the less familiar mangoes and alligator-pears. Their business involves an immense amount of wrangling, but we can forget that in the artistic effect of the scene, the unconscious grace of attitude, and the richness of contrasted color in fruit and dress and shining black faces. Passing these, we enter the main building—a long, tile-roofed corridor, running around a square court, towards which it is everywhere open. The meat and fish-stalls are in this court. The corridor is lined with stands for the sale of fruit, vegetables, tobacco, and cheap trinkets.

So much for the building; but the scene within is indescribable; it is not so much one picture as a hundred, all melting into one another, and changing and rechanging like the colors of a kaleidoscope. Not like a street scene with its rapid movement; nobody is in a hurry, but hardly anybody is still; as if the whole visible world were in a chronic state

of sauntering. And we saunter along with the rest, watching the animated groups around us.

Standing here, we can get the background of that fruit-stand, with its heaped-up purple and gold. The coatless and barefooted fruit-sellers glance at us curiously as they wait on their customers—servant-girls, for the most part, who have been sent to fill their baskets with oranges and bananas. Here comes a dark-skinned Diana—a stately mulatto woman, with her crimson skirt gathered in picturesque folds at the waist, and her white chemise falling away negligently from one shoulder; her fine face is set to an expression of infinite scorn, of withering contempt too deep for words. To be sure, all this acting is occasioned by a difference of three or four cents in the price of a string of beads, and the villanous-looking Portuguese gimcrack-seller who is the object of her wrath only laughs diabolically, and makes himself look a degree uglier than before; soon she catches sight of an acquaintance, and her scorn melts into a broad grin. So the two stroll away together, chattering as only these women can.

That dark, handsome fellow, daintily sipping his paper cigar, is a *mameluco*—so Brazilians call a cross between the Indian and white races. Something of the flashing Lusitanian fire he has, shining through the indolent grace of his gestures; much of the half-savage independence of his brown ancestors; but the mixture is tempered neither by the intelligence of the white nor the docility of the brown races; the *mamelucos* bear a deservedly hard name on the Amazons.

Squatted on the stone pavement is a toothless old crone, half Indian, half mulatto, with a pot of yellow *mingau* soup—a preparation of tapioca and bananas. Her customers—mostly Portuguese cartmen and sailors—receive their por-



tions in black calabashes, and swallow the mixture with evident gusto, gossiping, meanwhile, with one another, or exchanging not over-delicate remarks with the negro and mulatto servant-girls who pass them. These latter bring pails and earthen pans on their heads, and a little farther on we see a score of them grouped about a butcher's stall; the new-comers set their pans on the counter and produce little bundles of copper money; the butcher cuts the meat into shapeless chunks and, by some feat of calculation, flings to each a share apportioned to the money she brought; and the purchaser marches away with the pan of meat balanced on her head, her tongue running the while like a Chinese rattle. All the marketing is done in this way, through the medium of servants.

Observe these baskets of black berries, like grapes in color and size; they are the fruit of the *Assaí* palm, the slender, graceful *Euterpe* that we saw on the river-banks. One sometimes hears an alliterative proverb:

“Quem veio para Pará parou;  
Quem bebeu Assaí ficou:”

which we may translate, as Mrs. Agassiz has done:

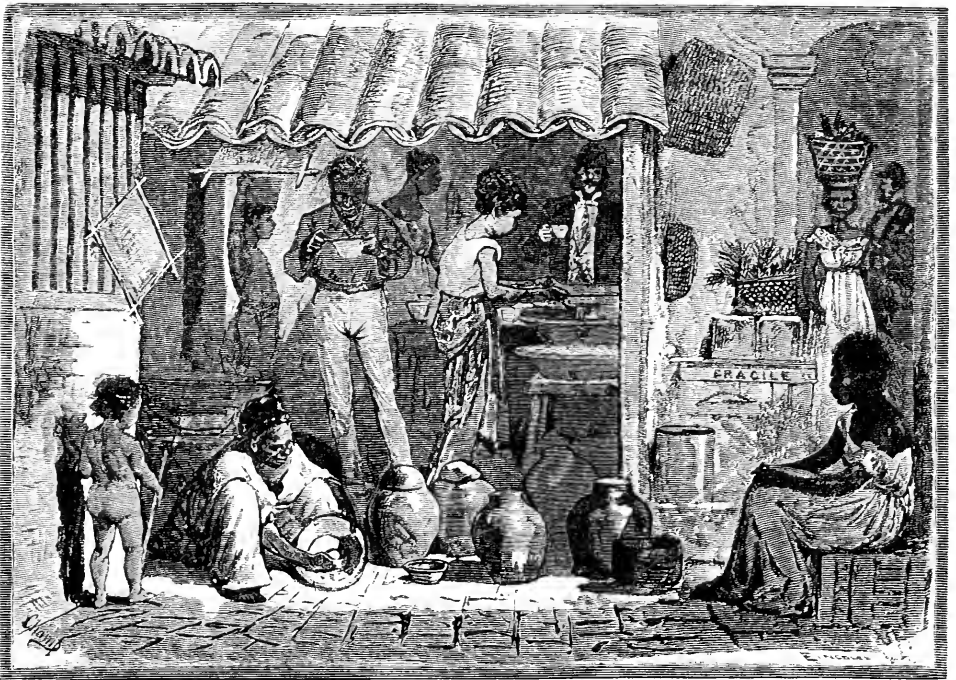
“Who came to Pará was glad to stay;  
Who drank assaí went never away.”

It is well, then, for us to learn how this famous *vinho d'assaí* is made.

In a dark little shed at the back of the court, two mulatto women are rubbing off the black pulp of the berries in great bowls of water, crushing them vigorously with their bare hands, and purpling their arms with the chocolate-like juice. After the first batch has been rubbed out, the liquid is decanted from the hard nuts to another lot of berries; these

latter being treated in like manner, the resulting thick soup is strained through a wicker-work sieve and dealt out to the eager customers.

Yes, the *Americanos* will have *assaí, com assucar*; so the little shirtless son scampers off after sugar. Ordinary customers at the stand are of the lower classes, who drink their two cents' worth of *assaí* with only a little *mandioca* meal by way of seasoning. In the forest, where sugar was scarce



The Assaí Stand.

and the fruit plenty, I learned to like it quite as well so myself; its brisk, nutty flavor is rather spoiled by the sweetening. However, our new-comers may prefer the civilized side; so the sugar is added, and we dip our moustaches into the rich liquid. Even the squeamish ones empty their bowls, and begin to suggest to themselves the possibility of entertaining another half-pint. Now talk no more of sherbet, and ginger-beer, and soda-water; hereafter we abjure them

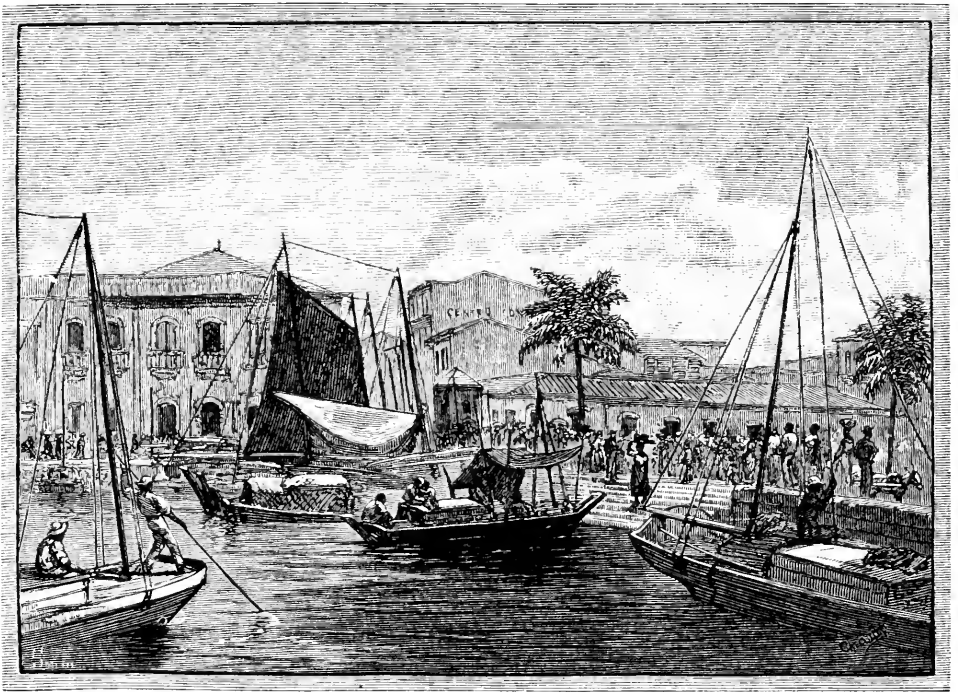
all, if we may but have our purple assaí. And observe—as Mr. Weller has it—that “it’s wery fillin’.” One can make a respectable lunch of Assaí alone.

Back of the market, by the water-side, there are other picturesque scenes. Here are numbers of canoes drawn up on the shore, the larger ones with a little cabin of palm-thatch or boards in the stern. The Indian and mulatto boatmen, for the most part, are selling their produce on shore, and some of them, no doubt, are getting beastly drunk on the proceeds; the canoes, meanwhile, are occupied by their families, and one cannot help noting the marked difference of character displayed by the two races. The flashily dressed negresses and mulattoes are chattering and quarrelling at the tops of their voices, while their not over-clean children tumble about on the muddy shore, laughing, screaming, crying, as the case may be, but always making a noise of some kind. The Indian women, on the contrary, are very quiet, sitting still in the canoes, and perhaps carrying on a subdued conversation. They are dark; not copper-colored, like our Northern tribes, but of a clear, rich brown. Some of the younger ones are decidedly handsome, and almost all are exquisitely neat in their tasty, light-colored calico dresses, sometimes with simple ornaments. The children—little ones are dressed *au naturel*—are shining and clean and sleek, and always very quiet. You notice, also, that the brown people avoid the sun, but the black ones seem to revel in it.\*

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\* One is reminded of Captain John Codman's observation: “When a white fireman on a steamer comes up from his watch, he always leans over the rail in the shade, where he can get the air; but the negro fireman comes up at noonday, under a vertical sun, and throws himself down to sleep on a deck that would blister a rhinoceros.” *Ten Months in Brazil*, p. 81. The Indians are much more susceptible to heat than the whites are.

Many of these Indians have come from surrounding rivers, a hundred, two hundred, occasionally even five or six hundred miles away. Most of them will sell their small cargoes and leave with the return tide. The women and children will see nothing more of the city than is visible from the water, or, at most, they will be treated to an hour's walk about the town, or a visit to one of the churches. And that is enough. They do not care to remain longer among the sweltering



The Market Wharf.

streets and glaring white walls. They long for their cool, shady forests, where they can swing their cotton hammocks by the water-side, and lounge away the hot noon hours, as free from care as the birds are above them.

Besides the small canoes, there are many larger ones, belonging to traders, who make long voyages on the upper rivers. They bring back forest produce which they have

received in exchange for their wares. Here are bales of crude rubber, in flask-shaped masses, as it came from the moulds; tall baskets of mandioca-meal, the bread of the poorer classes; bundles of dried salt *pirarucú* fish; bags of cacáo and Brazil-nuts. There are turtles, too, reposing peacefully on their backs, and odd-looking fish, and pots of crabs and shrimps. Not a few of the canoes bring monkeys and parrots, but their owners are loath to part with these. On the Amazons all classes are extravagantly fond of pets.

Formerly all the commerce of the river was carried on in trading canoes. Now the steamboats have taken their place, trading centres have been established at various points along the river, and the canoes make shorter voyages. We can see the busy wharf of the Amazonian Steamboat Company from our breakfast-room at the Hotel do Commercio, and two or three of their vessels are lying in the river; they make voyages, at longer or shorter intervals, to the Madeira, Purús, and Tapajós; twice a month passage can be engaged to Manáos, and from thence other lines extend their trips almost to the base of the Andes. There are several smaller companies, but they are all thrown into the shade by this rich Amazonian line, with its numerous branches. It has a large subsidy from the government—too much, probably, for its wants, now that the enterprise is well established.

The beauty of the river-view is not heightened by the foreground—a bare, muddy space half filled in to a wall along the river. This wall was built—how many years ago I know not—with the design of giving a deep water-frontage to the city; but the river worked faster than the contractors. While they were building, it spread a great bed of mud outside of the wall; and so in the end there was a bank there, uncovered at low water, just as before. Meanwhile the space between the

wall and the old bank was a muddy pool, littered with garbage of every kind ; it would have bred a pestilence over the whole city, but for the daily washings it got with the tides, and the scavenger crabs that swarmed in it. It remained so for many years, an eye-sore to the city ; the provincial government could never fill it, though the work was almost always under contract. Now it is evened over, in great part ; but it is useless, as we have seen, and one does not like to think of the money that has been wasted on it. This is only a type of the gross mismanagement that has disgraced Pará. Now and then a good and efficient president will set his hand to a reform, and for a time he will work wonders ; but sooner or later he is certain to be ousted by the aggrieved politicians. Of course, with the mismanagement there is often dishonesty ; scandalous stories are told of the fabulous sums that have been sunk on this or that public work—stories that are strongly confirmed by the impoverished state of the provincial treasury, and the reputed wealth of certain officials and contractors.

At Pará one day is like another. The mornings are cool and pleasant. From ten till two the heat increases rapidly, commonly reaching 90° or 91° Fahrenheit. A little later great black clouds appear in the east, spreading rapidly over the sky and turning the intense glare to a twilight darkness. The temperature is lowered suddenly ; the wind blows in varying gusts ; then the rain comes pouring down in great dense masses, flooding the streets, hiding vessels on the river, drenching unlucky boatmen and their passengers, and—ere we know it, the sun jumps out, and there is only the vanquished cloud-army flying into the west. Sometimes the first shower is followed by another one, and even a third ; after that the clouds disappear, or hang like purple curtains on the western horizon. By sunset the ground is dry, and all nature

is smiling. This is the rule all the year round ; only the wet season, extending from January to May, is distinguished by more copious showers, sometimes lasting until evening, with an occasional day or night of continued rain ; while, in the height of the dry season, a week may pass without any showers at all ; but even then the ground is watered by the heavy dews.

Pará would be a healthy city if sanitary rules were properly observed. The streets, it is true, are kept decently clean, but in many of the houses there are filthy courts, the receptacles for garbage and rottenness of every kind ; it is a wonder that people can live within range of their stench. As it is, there are many cases of typhoid ; but yellow fever, though it appears nearly every year, takes a milder form than at Rio de Janeiro, and the number of deaths from it is not very great. Sometimes intermittent fevers are prevalent. Pulmonary complaints are very uncommon.

If we walk out after midday, we find the streets almost deserted, though the heat is not excessive. At four o'clock the wholesale stores are closed, and the merchant goes home to his dinner. Retail establishments are kept open until after dark, but they do little business.

The evenings are delightful. Walking out in the better quarters, we find the whole population out-of-doors ; gentlemen sitting before their houses under the mango-trees, smoking, or sipping the after-dinner coffee, and enjoying themselves with their families. The merest chance acquaintance makes us welcome at once to these groups ; chairs are brought, coffee and cigars are served, and we may sit for an hour, chatting with our host and watching the groups around us.

Out of business hours the Paraense is the most sociable person you can imagine. Pleasure is his occupation ; the

cares of his counting-room are all locked up in the safe with his day-books and ledgers. You get acquainted despite of yourself; everybody knows everybody else, and insists on introducing him. I have found no other Brazilian city where there is so little ceremony. We see people dressed sensibly in white linen; except on state occasions, the sweltering black coats of the southern provinces are not *de rigueur* in Pará. The women, too, wear natural flowers in their hair; but in Rio de Janeiro and Bahia they must needs disfigure themselves with abominable French bonnets.

Since the establishment of hotels, the rule of universal hospitality is no longer adhered to, but most of the better classes still keep open table to their acquaintances, at least for the late afternoon dinner. People live well and simply, though with too great a preference for animal food. Portuguese or French wine is generally served with breakfast and dinner, and there is a light dessert of fruit.

In domestic life, many of the old bigoted notions concerning women are still retained; but at Pará, one no longer sees ladies shut up from all intercourse with visitors, and banished from the table. In exact proportion to the advance of more liberal ideas, the standard of private morals has risen; and though there is vast room for improvement in this respect, though infidelity on the part of the husband is even now looked upon as a venial sin, still vice has no longer that openness and unrestrained license that formerly made it painfully conspicuous.

As in Rio de Janeiro the city merchant has his *chacara* in the outskirts, so here he has his *rocinha*\*—a country dwelling in the city, a house with ten acres of back door-yard. The

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\* Diminutive of *roça*, a clearing. The word is apparently a provincial one.

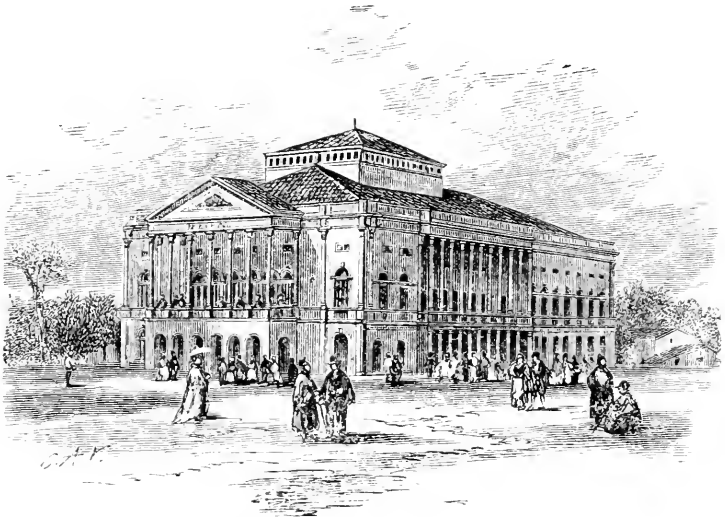


finest *rocinhas* are in the suburb of Nazareth, to reach which we can take the mule-drawn cars that we saw on the *Rua dos Mercadores*. The seats are well filled with passengers of both sexes and all colors, many of the laborers without coats and barefooted, but clean and neat.

From the business part of the town we pass first through a series of narrow streets, where there is hardly room for passers-by to avoid the car. The streets are close and dirty and uninteresting; black mould spreads itself on the kalso-mined walls, and weeds hang over the projecting tile-roofs. An apology for a sidewalk exists in some places; but there are so many ups and downs to it that pedestrians generally prefer the roadway. We get glimpses of slovenly looking women peering out from behind the swing-blinds, and dirty children disappearing through the open door-ways as the car comes up; looking in, we see nothing but blank white walls and bare floor. And down into the barren street the sun sends its liquid gold, and casts black shadows, just as it does in a thousand other ugly places.

Turning next into the great *Largo da Polvora*, we pass on by the pillared *Theatro*, one of the finest of the public buildings, the white walls of which are well set off by the heavy foliage behind them. As for the *Largo*, it is a great, treeless waste, like a dozen others in the city; but the sides are lined with magnificent dark mango-trees, and the houses are of a better class than those we have seen; very fresh and pretty some of them are, with their facings of glazed white and blue tiles. We observe these tile-facings in many places along the *Rua de Nazareth*, where we turn off from the *Largo*; decidedly the prettiest dwellings in the city are here, and they are contrasted with rows of noble mango-trees, like those of the square. The gardens in front of some of the houses are stiff

and pedantic, it is true ; but in this climate Nature gets the better of the gardeners, and, despite them, will disport herself in glorious masses of foliage and bloom ; plants, such as grow in our green-houses at home ; but not the delicate nurs-



The Theatre, Pará.

lings of the North ; great, hearty shrubs, with the vigor of their forest homes fresh on them, and their untrammelled roots sinking a yard deep into the rich loam.

But the gardens are tame compared to those neglected *rocinhas* where the grounds are yard, orchard, wilderness, all thrown together ; where flowering vines clamber over the fruit-trees, and the rich flowers are smothered in richer weeds, and rampant second growth threatens to annihilate the whole estate, as it undoubtedly would, did not the inhabitants make a sally sometimes with axes and wood-knives. I think Nature here has a grudge against humanity, with its angular houses and fences ; she wants to round off everything to suit her flowing fancy. But if, instead of the blows and hard words she gets, she were coaxed and patted on the back, how she would break out into smiles and loveliness !

Ah, well! I suppose we shall go on abusing her while the world lasts; but she will have her rights, for all that. From this primly dressed child, daubing and mussing its frock in the gutter, to the tumble-down houses of the side-streets, half covered with moss and weeds, she is forever picking up our ugly art and turning it into something picturesque. Even the new white chapel at Nazareth is getting its coating of gray and brown mould, and the artist will go on painting it with delicate touches, and rejoicing in its beauty, till Vandal man comes along with his whitewash brush and spoils the work of years.

The chapel is dedicated to *Nossa Senhora de Nazareth*, who is not to be confounded with *Nossa Senhora* of anything else. You see, this one is remarkable for a miracle which she performed in the eleventh century, when the devil, in the form of a deer, was leading a noble hunter over a precipice. As she saved the life of the hunter, she is entitled to especial regard—may be invoked, for instance, in cases where *Nossa Senhora da Esperança* has given little hope, and *Nossa Senhora de Belém* has failed utterly.

Our Lady of Nazareth, then, is the patron saint of Pará, and every year there is a grand festival given in her honor. Then the city is thronged with strangers, often from towns three or four hundred miles away. Our Lady is carried in solemn procession through the streets, and the church is daily filled with worshippers. The great square near by is lined with booths, and gay with flags and transparencies. Every night there is a display of fire-works; costume dances are extemporized; theatres with execrable actors attract the public, especially on Sunday evening, and for a week the city is given over to universal enjoyment. People are orderly and quiet. There is less hard drinking than you see

on any holiday at the North, and scarcely any quarrelling and fighting.

I do not think there is a very strong religious feeling either in Pará or in the other Brazilian cities. The more ignorant negroes and mulattoes delight in the brilliant ceremonies of the Catholic Church. Better educated people yield a discreet assent to the forms and observances, but there is very little deep feeling underlying their zeal. The explanation is to be looked for in the utterly corrupt condition of the clergy. In Brazil a virtuous priest is the exception. I do not say that there are none who do their duty with zeal and reverence, and practise their own precepts; but the majority lead lives that give the lie to their preaching, and bring the church into disrepute with all thinking men.

The present Bishop of Pará is one of those remarkable men whose names will always be landmarks in the history of the Church. Pure in his own life, he has gathered around him a body of young priests who emulate the sacrifices and virtues of the early Jesuit missionaries. I have met these young men at Pará and in some of the river towns. One of them I esteem as a personal friend—a man whose life is above reproach, and whose scanty income is all expended in deeds of charity and kindness. If the bishop is to be praised for this work, he is unquestionably to be censured for his interference with political matters. The feeling is rapidly advancing in Brazil that church and state must be disunited. If the ecclesiastical power meddles with the secular one, there is always strong comment. Sometimes the government resists the priests, and then there is a storm, often ending in popular tumults, as was the case recently in Pernambuco. The bishop holds, in the fullest sense, that the state should be subservient to the church, and the whole to

the See of Rome. Hence he is unpopular with a large class of the people. These, led by the Masonic brotherhood—a body of great political importance in Brazil—keep up a determined resistance to the bishop and his party.

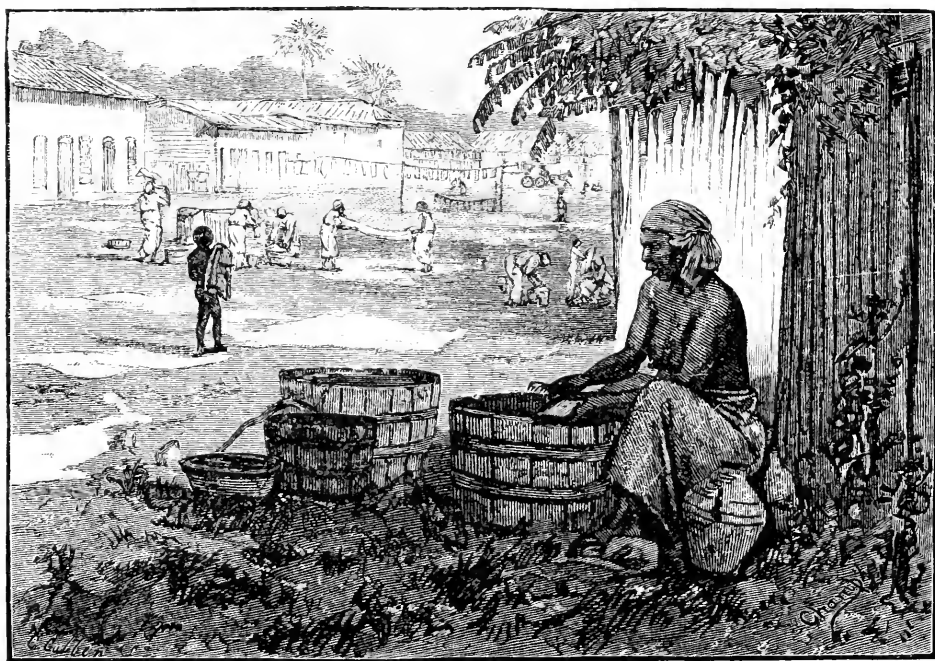
Emphatically, an American need not fear to express his principles in Brazil; he is protected as well by public opinion as by the government. Even the priests, who might be supposed to be intolerant, will discuss theological differences with the utmost good-nature, and with no small powers of argument.

We can visit the churches almost any morning, or go to hear high mass at the Cathedral on Sunday. There is more glitter and ceremony than in our northern Catholic churches. Worshippers stand and kneel on the stone floor, for there are no seats. The churches are high and rather bare, except around the altar. One sees three or four conspicuous life-size figures of saints, which, on certain days, are carried through the streets in procession, with ringing of bells and firing of rockets, attended by red and green coated brotherhoods, and dainty little child-angels with spangled dresses and gauze wings. For the rest, religion involves nothing more than an occasional visit to the confessional, and pretty liberal contributions to the church treasury and to the poor.

Aside from the churches and the custom-house, we shall find little to interest us in the public buildings. The president's palace is a great, glaring, barrack-like structure, looking out on one of the squares. Within, it is richly furnished, but with that stiffness and lack of ornament that characterize all Brazilian dwellings. The episcopal palace is still worse; jammed in among the surrounding buildings, it looks like a warehouse.

It is a pity that the Paraenses have left their public

squares the weed-grown wastes that they are. Only in some of them there are picturesque wells, and, of a sunny day, when our walks take us past these, we see groups of noisy washerwomen drawing water over the curb, and spreading their clothes on the grass to dry. There are no water-works aside from these wells. Water is hawked about the town in great hogsheads set on ox-carts and attended by rough-looking *Gallegos*\* with red scarfs and glazed hats. As for milk,



The Washerwoman—Pará.

that is carried around by the cow, who, with her bleating calf tied to her tail, is driven from door to door and milked in sight of the customers. Of course, under these circumstances, watered milk is unknown.

There are a hundred other odd characters in the streets ; bakers with great baskets of bread ; negro women selling

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\* A term of reproach, originating in the hatred of the Portuguese for the Spaniard, and especially for the natives of Galicia.

sweetmeats, or pots of *assaí*, or tapioca soup; porters carrying heavy trunks on their heads, and so on. Ladies buy their dresses by samples carried around from house to house. Servants pass by with a dinner or supper nicely laid out on a tray: it is the custom here; if you engage board with a family, the meals are brought to your room.

When we have "done" the streets, and the dirty little wine-shops, and the animal store, with its monkeys and wild



"Monkey Joe's."

hogs and boa-constrictors and electric eels, we have yet the never-failing beauty of vegetation in the outskirts. Everything seems buried in green; here is a ruined house, for instance—a wonderful picture, enshrouded in flowering vines until hardly a beam or a square inch of wall is visible; a rolling, tumbling, rollicking mass of foliage; the very ruin

seems to catch the infection, passing its last days in a kind of tottering hilarity. And so it is with everything on which this rampant plant-life can get a hold ; palings, stumps, heaps of rubbish, are all draped and curtained and padded with vines and weeds, till their rough angularities have disappeared under the soft curves, as you have seen a pile of sticks covered with snow.

The Monguba avenue has lost much of its ancient glory ; the trees, for some reason, are dying, and no care is taken to renew them. But the *Estrada de São José* more than fills its place. There is something so wonderful in the stately simplicity of palm-trees, and these royal palms\* are among the most beautiful of their tribe. Looking down the long avenue, we see the feathery tops almost meeting overhead, and quivering with the lightest breath of wind, lending, somehow, a kind of dignity to the tapering stems, which do not sway as other trees do, even in a storm.

We can follow out this road to the gas-works, and back of that to the wet ground near the river ; there the second growth is one tangled mass, with palms and vines and great glossy *Arums* by the water-side ; not the little arrow-heads of our brooks, but trees, with leaves a foot long and almost as broad, like polished shields among the vines that clamber over them.

But the most beautiful suburban road is that leading north from the city to the river Una. If you would see it at its best, avoid the hot hours ; come in the cool morning, when the leaves are fresh, and all the world of insect and bird-life is out to bathe in the early sunshine. Beyond the narrow streets we find a broad, straight road, with deep ditches, and palings on either side ; the ditches almost invis-

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\* *Oreodoxa regia* : an imported species.



ble in the heaped-up masses of plants that cover them, and every yard of the palings an exquisite picture. The *rocinnhas* are far back from the road—long, low buildings, sometimes with the tile-roof projecting on all sides, to form a broad veranda ; the yards all weedy and tangled and glorious, half hiding the whitewashed walls.

Of the fifty kinds of vines, the most conspicuous here are *Convolvuli*, some of them very like our morning-glories ; here and there we notice a cypress-vine peeping out from among the others, the same pretty, tender thing that it is at home. Where the vines give them space, there are great,



Estrada de São José.

sprawling *Lantana* weeds, and *Solanaceæ*, allied to our potatoes, but these stand bolt upright, ten or twelve feet high, and their great pale leaves have scattered spines over the surface. For the rest, there are sensitive mimosa-bushes, like brambles, and arums along the ditches, and a host of other plants, small and large, that I do not even know the names of ; all heaped over each other and rolled into beautiful masses, a delight to the eye.

Farther on, the houses disappear almost entirely ;—are lost in the thickets, perhaps, and the people only find them by

these little crooked paths. There are low, swampy tracts by the roadside, and second growth, with the vines everywhere; not clambering up the tree-trunks merely—burying them, spreading in great masses over the tops, hanging down in splendid green curtains, binding tree to tree so that you cannot see a foot into the woods. Here and there an *assaí* palm,\* or a *miriti*,† or an *inajá*,‡ rises out of the drift and spreads its great glossy leaves to the sun; the vines avoid palm-stems, perhaps because they give no good support for their fingers.

Sometimes we see a branch with another kind of drapery; nests of the *japim* birds § hanging like rows of socks—or, suggests one, like the tails of little Bo-peep's flock that were left behind them. A garrulous, noisy creature is the *japim*; the hanging villages are lively from morning till night with the gossip and scolding. This species has a glossy black and yellow coat; in shape it is like our blackbird, to which, indeed, it is allied. Brazilians delight to have the *japins* about their houses; sometimes the young birds are kept indoors, and, as they grow, they become as tame as kittens. On the trees I have often seen fifty nests together.¶

There are a good many small birds about the thickets; tanagers and finches, and rarely a hummer darting about the flowers. Pretty green lizards scuttle off through the leaves; there may be ugly, crested ones lurking about the shady places, and snakes possibly; but we see nothing of these. The bright beetles and spiders are hidden, too; but looking down the road we can see hosts of dragon-flies darting about as thickly as a swarm of bees. Some of these dragon-flies

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\* *Euterpe edulis*.

† *Mauritia flexuosa*.

‡ *Maximiliana regia*.

§ *Cassicus icteronotus*.

¶ A kind of wasp builds in the same trees; the Indians say that it is never found except with the *japins*.

are remarkable for their bright red bodies ; others are green and black, like our northern species. Besides these, the conspicuous insects are butterflies ; common kinds, such as are seen in open places, but some of them are as bright-tinted as flowers. The strangest are the *Heliconii*, with very long wings and slender bodies. They fly feebly about the flowers, and never seek concealment as other species do. But you will notice that the birds, most expert butterfly-hunters, never touch a *Heliconius*. The insects are protected by a very strong, disagreeable odor, which is quite as disgusting to the birds, it would seem, as it is to us. Mr. Bates, who published a beautiful monograph of these butterflies, has shown that the slow flight and carelessness of concealment are only a natural result of the immunity they enjoy.

In the woods beyond there are other butterflies ; handsome species, with yellow and red markings, quaker brown ones along the ground, and now and then a splendid blue *Morpho* flapping lazily over our heads. Under the arum-leaves we find lovely creamy *Helicopi*, with trail dresses spangled with silver ; of all the forest beauties these are the prettiest and most delicate. There are hundreds of other species, but they require careful search ; you must come to the forest day after day, and traverse every path, before you can amass such collections as Bates and Wallace tell of.

The forest here is second growth, probably, but it is a hundred feet high, rising like a great hedge on either side of the road. There are cart-paths running through it, and farm-houses beyond, and then more forest stretching away into the untrodden interior ; everywhere the same tangle of branches and vines without number.

We are not likely to meet with such a glimpse of still-life as I once had near by here. It was on a forest road, two or

three miles back from the city ; the way was arched overhead, so that the sunlight broke through only at intervals. Some tree or vine had been shedding its blossoms, deep purple-blue cups strewn the ground beneath like a carpet ; here these stray sunbeams dropped, a kind of weird blue light against the shadows behind ; so strange the effect was, so unreal, that I stopped in astonishment before I saw what it was. Now, if an artist painted such a scene, people would cry out, “ Unnatural ! ” But every artist knows that Nature gives these unnatural touches now and then.

At the end of this Una road there is a great, tile-covered building, the public slaughter-house. This is the gathering-place of the city vultures ; rows of them are sitting on the fences around, or hopping about awkwardly as they quarrel over bits of offal. Ugly creatures, truly, on the ground ; but you forget all about that when they are in the air ; then they are the most stately of all birds. We watch them circling over our heads : hardly ever moving their wings, but they soar almost out of sight. The wonder is, what carries them up ; an old question that has never been answered satisfactorily. No doubt the wind aids them.\*

River-fish swarm about the slaughter-house : bloody *piranhas*, no doubt, and *acarás*, and fifty other kinds. We find the curious little *Anableps tetraphthalmus* swimming along the surface. The eyes are divided, so that each has two pupils ; of these, the upper pair are for the air, and the lower for the water ; a most curious contrivance. The fish keep near the shore, and however you may chase them, they will never dive.

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\* Standing on a high hill, I have seen a vulture make a dozen turns about my head, falling with the wind, and rising against it, but never moving its wings at all.

It would be worth our while to follow up the Una in a canoe ; there are palms on the banks, and broad-leaved wild bananas, and I know not what of the grand and beautiful in plant-life. So it is all about the city ; the plants overrun everything ; they invade even the church-roofs, and rows of bushes grow along the eaves.

We can visit the Botanical Garden, where the not very elaborate culture has only given Nature a better chance to



The Botanical Garden.

show her skill. And when gardens, and outskirts, and second growth are all familiar, a little walk beyond the city limits will bring us to the high forest, thick, dark, massive, where the few roads are mere paths, and one may lose himself almost within sight of the cathedral towers.

Two hundred and fifty years have not insured his domain to man ; petty strifes and revolutions have stirred the city, but the forest looks down on them all and shames humanity

with its steadfastness. A story on fifteen square miles of cleared land. What is that to the leagues beyond? I am half ashamed to tell it.

Maranhão had been colonized by the French as early as 1594. In 1615 the Portuguese, under Jeronymo de Albuquerque, dispossessed them, and founded a new captaincy, which included not only the present province of Maranhão, but all the Amazons valley. As soon as tranquillity was assured on the coast, measures were taken to secure the Amazons region against the Dutch trading colonies which were reported there; and to this end, an expedition of one hundred and fifty men was sent, in three canoes, with the brave Captain Francisco Caldeira de Castello Branco as leader. Caldeira had orders to establish a colony at the mouth of the Amazons, and to expel the Dutch. He and his company left Maranhão on Christmas day, 1615, and followed the coast and the left shore of the Pará river, until they reached a dry point at the mouth of the Guamá, where they deemed it best to locate their new city. No doubt Caldeira knew well enough that he was not on the main Amazons; but with the small force at his command, it would have been unwise for him to be separated from the main colony, as he would have been on the northern side of Marajó.\* He began immediately to build a fort, which he called *Santo Christo*, and the settlement itself was named *Nossa Senhora de Belem*; a title which it still retains on official papers.† It is said that the site selected was already inhabited by warlike Indians. Caldeira not only succeeded

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\* Visconde de Porto Seguro : Hist. Geral do Brazil, Tom. I., p. 451.

† In full, *Nossa Senhora de Belem do Grão Pará*. Pará seems to a coruptella of the Tupi word *Paraná*, a sea, applied to large rivers, and especially to the Amazons and the Pará.

in subduing these, but by their aid he kept the surrounding tribes at bay, until his fortification was completed.\* He might have gone on prosperously with their aid, but he presently learned of a colony of unfriendly Dutchmen, three hundred or more, who had established themselves on the northern side of the Amazons, "with two palisades to protect their plantation, especially of tobacco, cotton, and anatto, trading also in timbers." As this force was double his own, our captain was discreet enough to send for aid; a ship was despatched to Portugal, but as he had no other vessel to spare, he resolved to send word overland to Maranhão. Pedro Texeira (the same who afterward explored the Amazons, and brought Acuña down from Quito), was chosen for this difficult service; he set out with three white companions and thirty Indians, and at the end of two months arrived in Maranhão, greatly to the surprise of the dwellers there, who were far from expecting a white man from this quarter. In after-times there was a road from Pará to Maranhão, but it has grown up long ago, and you never hear now of a land journey from one city to the other; I doubt if it could be made without great difficulty and danger.

Help came from Maranhão, and the colony prospered at first, until its peace was disturbed by internal feuds. Caldeira was deposed by the colonists, and Balthazar Rodrigues de Mello was placed at their head. Meanwhile, the surrounding Indians took advantage of these quarrels, and a host of them, under the chief Guaimiába, laid siege to the city. This state of things continued till the arrival of the new captain-general, Jeronymo Fragoso; he drove away the Indians, and summarily imprisoned not only Balthazar, but Caldeira

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\* Berredo : Annaes do Maranhão, p. 407.

also, sending them both to Pernambuco, the then metropolis of Brazil. As soon as his authority was established, he began a destructive war on the Indians, carrying his arms far up the Amazons, and spreading desolation among the villages. It was in this war that Bento Maciel Parente first distinguished himself as an Indian hunter, "so that the governor himself was obliged to stop him." But about this time Fragoso died, and there was a long quarrel about his successor, resulting finally in the selection of Bento Maciel himself, who built a mud fort at Pará, and went on enslaving Indians to his heart's content, until he was superseded in 1626. Upon that he repaired to Spain,\* and brought forward a patriotic plan of his for enslaving the whole Amazons, after the style then in vogue among the Spaniards.

"For these reasons," he says, "your majesty should create a bishop, and send priests, who, with all fervor, shall apply themselves to instruct the Indians. And for the sustenance of this bishop, and his ministers, you should give in charge † the conquered people, as has heretofore been done in the Spanish Indies. Considering that, by divine precept, all creatures are obliged to give to God and to his ministers a tenth of their harvests, and as among the Indians it would not be easy to secure this tenth, seeing that they neither respect the commandment nor know how to count as far as ten, your predecessors (in the Spanish Indies) commanded that such tithes should be paid *per capita*.

"In the Spanish Indies, every man and his wife pay a certain annual sum, according to the fertility of the land, and by this rule it would appear convenient that every Indian of Maranhão should pay per year three ducats, either in money, or in the fruits which he raises, or in personal service; dividing the products into three equal parts" (here comes the gist of the matter), "one for the bishop and his priests, one for Your Majesty, and the other for THE *COMMENDADOR* TO WHOM

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\* Portugal and its dominions were at this time under the control of Spain.

† *Encomendar*: which you can translate, if you please, "farm out."



SHALL BE GIVEN THE ADMINISTRATION OF THESE TAXES. These priests will take with them many relations and poor persons, to live in the new lands, who will go, hoping with the favor of the priests to secure grants of lands to cultivate and tax, and every Indian, having his own master, will be defended and preserved, and cured when he is sick, and exercised in war, so that he shall aid in defending the land and in conquering others. It is a manifest mistake to suppose that this method of conquest is unjust and violent to the Indians; because tithes are commended by divine precept; the holy popes have applied them for the expenses of the conquests, and the taxes are only a right of those who with arms aid in these conquests, and thus serve God and the king." \*

Fortunately for the Indians, Maciel's project was never carried out; and though the Portuguese masters were unjust and cruel, it must be said that they never showed themselves as murderous as the Spaniards. Bento Maciel went down to universal execration. His son of the same name was worthy of the father. Acuña tells how he found one of his expeditions about to proceed against the Tapajoz Indians, and he relates with indignation how these men obtained from the Indians their poisoned arrows, under pretext of a surrender; but, having thus disarmed them, they forced the Tapajozes to give up all the prisoners which they held of other tribes, and these were carried away as slaves.†

The Paraenses distinguished themselves in the recovery of Maranhão from the Dutch, and when, in 1641, Portugal threw off the Spanish yoke, they were among the first to welcome the change. But you must not look upon Pará as a city yet. At this time it seems to have been remarkable rather for the great number of religious institutions than for any commercial importance.

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\* Petição dirigida pelo Capitão-mor Bento Maciel Parente ao Rei D. Philippe III.

† Nuevo Descubrimiento, LXXV.

“It is joyful and full of fruit trees. There are four hundred inhabitants, the most of whom are cultivators. There are four monasteries, São Antonio, Carmo, Mercês, and that of the Company of Jesus ; a city church and two others, and a hospital ; all of which are sustained by the inhabitants with their alms. There is a fort, well enough defended by three companies of infantry. The people make much tobacco ; and there is here much cotton and cloves, which, being wild, are different from those of India. The land is great, and would hold many people ; the Indians, when the Portuguese arrived, were more than six hundred villages of *Tupinambás* and *Tapuios*, but in war with the Portuguese the *Tupinambá* nation was destroyed ; many Indians died in the war ; others retired to the interior ; and those who assist the Portuguese to-day are fifteen villages, working on the farms for two yards of cotton cloth every month, which is the price everywhere ; besides many slaves which they ransom \* from the wilderness.” †

The question of enslaving the Indians was agitating all Brazil at this time. Father Antonio Vieira, at the head of the Jesuits, sought to save them from this fate, and in the end the whole government of the Indians was delegated to the Jesuits themselves ; they labored to bring their charges together in villages—the universal policy of the Jesuit missionaries. No doubt they sometimes turned the brown labor to their own advantage, for even in those early days the Jesuits began to show that they were human. But we can let that rest ; we owe to them the taming of a large portion of the Indians—those, I mean, who were not destroyed by the Portuguese and Spanish oppressors. The slave-makers were quarrelling with the priests by this time ; in Pará they placed all sorts of obstacles in the way of Vieira and his

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\* *Resgatar*, a term then, and now, used to express the buying of Indian prisoners, or their forcible seizure from the tribes in which they are captive.

† Mauricio de Heriarte : *Descripçam do Maranhão, Pará, etc.*, 1662. Published by the Visconde de Porto Seguro.

men, but for the present they were beaten. The Indian slave-trade was carried on furtively, but the price of this kind of labor became so high that the planters began to import negroes from Africa; and so a third race came to take part in the history of the Amazons.

A dangerous element, too, which made itself felt in the after-revolutions. The Jesuits were expelled in the end, and wholesale Indian slavery was never carried out. Gradually the slave-making subsided to the form which is still found on the upper rivers, though it is entirely illegal,—the buying of captives and retaining them as servants until they are of age. The shipments of slaves from Africa were not large; the Paraenses were too idle or proud to do their own work and build up the country on a sound basis; they cried, as they cry now, for *braços*—arms to work for them. The people began to interest themselves in forest industries—rubber, drugs, Brazil-nuts, and so on—and these natural riches became a positive hinderance to the country, because they drew attention from agriculture. Finally, to set the province back still more, there came the tumults of 1823 and 1835.

The independence of Brazil had been proclaimed in 1822, and D. Pedro I. had been inaugurated at Rio, but the northern provinces were by no means inclined to follow the movement. At Pará, many of the most influential merchants were loyal Portuguese; there was political ferment and a gradual dividing up into parties, but no direct outbreak against Portugal until April 14, 1823. João Baptista Balbi, an Italian, seems to have been the prime mover of this first revolt; with him were associated a number of officers in the different regiments, notably a certain Captain Boaventura. Early in the morning of this 14th of April, the conspirators gained admittance to the artillery quarters (Balbi counterfeit-

ing the voice of the colonel) and captured all the officers, without the least resistance. Meanwhile, Boaventura and his comrades succeeded in forming one of the regiments in front of their barracks; to these there came a squadron of cavalry, and, being ordered thereto, all together gave a chorus of *vivas* for the emperor, apparently without well knowing what it was all about. Presently another regiment was formed and marched out to meet the first one. Boaventura shouted *Viva o Imperador!* and all the soldiers shouted, "with great enthusiasm," say the chroniclers. But their major, Francisco José Ribeiro, was not in favor of the movement; he slipped in a little speech in favor of the king of Portugal, and, as everybody was silent, he immediately declared that the third regiment was not in favor of Brazilian independence; whereat the soldiers opened their mouths, and, not knowing what to say, shut them up again, and *viva'd* nobody. Boaventura, not being equal to this unexpected emergency, immediately posted off to the artillery quarters, where his friends had the guns arranged to sweep the street. At this moment one of the disarmed officers ran to a gun, reversed and fired it, killing a sentinel and wounding a sergeant; he was immediately shot down. Beyond this there was no blood shed; the infantry regiments, being now under Portuguese officers, were marched against the conspirators; a discharge of grape would have scattered them, no doubt; but Boaventura would allow no resistance; he stood in a theatrical attitude, with folded hands, declaring that no drop of blood should be spilled; he and his comrades were presently marched away under guard, and the soldiers went to bed again. The end of this sleepy little revolt was more serious. No less than two hundred and seventy citizens were condemned to death, but were sent to

Lisbon for execution ; many died on the passage, through the barbarous treatment that they received ; those who escaped were finally liberated.\*

A few of the conspirators, who had escaped, formed a new revolt at Muaná, on the island of Marajó, and these were only beaten after a hard battle. They were marched to the Pará prisons ; “ and while passing through the streets they were jeered at and hooted by the Portuguese party, some of whom had whips and clubs publicly hanging from their windows.” †

However, the national feeling began to grow ; it was strengthened by the weakness of the Portuguese government, and a decisive event presently turned the city over to the emperor. At that time the Englishman, Lord Cochrane, was in charge of the Brazilian navy ; he had captured Maranhão, and now he sent Captain Grenfell with a ship, to bring Pará into subjection. Grenfell had orders to feign an approach of the whole fleet, which he did so well that the provincial junta immediately gave in its adhesion to the emperor, and Grenfell was welcomed to the city.

When the deception was discovered there was a good deal of discontent in the Portuguese party ; about this time, also, an extreme liberal party began to make its appearance in Pará, and between the two the place was in a ferment. Allegiance to the emperor was solemnly proclaimed on the 12th of October, but it was well known to the liberals that there were still a number of Portuguese sympathizers in the junta, and their dismissal was demanded. On the night

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\* A specimen of Portuguese justice, which has too often been repeated in Brazil. People are not legally condemned to death, except in rare instances ; but they are illegally murdered in prisons and prison-ships. I am glad to say that there are reforms in this respect.

† D. A. Raiol : *Motins Politicos da Provincia do Pará*, Tomo I., p. 59.

of the 15th a revolt broke out among the soldiers who favored the emperor. Three regiments joined together and marched to the arsenal, and a well-known liberal, the Canon Baptista Campos, was forced, much against his will, to lead them. A crowd of people joined the soldiers; they shouted for arms, which were given them; then they marched to the palace, where they demanded that Baptista Campos should take the presidency. He and others succeeded in calming the crowd, but squads of half-drunken men wandered about the streets all night. Now, as in after-times, the liberal party evinced a spirit of deadly hatred against the Portuguese. A number of their shops were sacked and burned; on the succeeding night the same scenes were repeated.

The junta sent in haste for Grenfell to put a stop to the revolt. He came with a body of marines, and disarmed all the regiments that had taken part in the uproar; they were marched to a public square, and there one man was chosen from each of the five regiments, and shot down without mercy. The Canon Baptista Campos, who was by no means to blame for it all, was tied to the muzzle of a gun, and a lighted match was held ready; he was commanded to confess before he was blown away. But for this time the Englishmen saved that punishment for the Sepoys; the junta interceded for Campos, and he was carried on board the captain's ship, whence he was subsequently sent to Rio.

Meanwhile the remaining soldiers were marched to prison; presently after they were transferred to a brig in the river, and there the whole two hundred and fifty-six were shut into a part of the hold, "thirty spans long, twenty wide and twelve high,"\* and left for the night. The air was calm and very

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\* Evidently a mistake, but these are the dimensions given by Brazilian writers.

warm. The crowd begged for drink, and brackish water from the river was lowered to them in a can—poisoned, some say. The prisoners got little good from it, at any rate ; they threw off their clothes ; crowded to get a breath of air from the one gangway ; turned raving maniacs at length, with their sufferings, and began to tear each other with their nails and teeth. A quantity of lime was thrown down on them, shots were fired into the hold, then the gangway was closed, and after a while the noise ceased. In the morning they opened the hold and found a heap of two hundred and fifty-two dead bodies ; four only, who had concealed themselves behind a hogshead, were still breathing ; of these, three died the next day, and the fourth lived for some years, in great suffering, the only survivor of this black scene. It is difficult to suppose that the junta intended the death of these men, the most of whom were ignorant soldiers, and only dangerous when led by unprincipled men. Grenfell must have been to blame for the massacre, to a certain extent at least ; he provided the ship, and had the prisoners taken on board. Certainly, he did not show by his subsequent acts that he was at all just or merciful. The junta declared that the prisoners, actuated by the same spirit that led them to revolt, had killed each other in a mad frenzy. Of course the liberals magnified the crime, and made the most of it.

There was no peace for the province. Even after the empire was fully acknowledged, the division of parties continued as strong as ever ; on the one side an invincible hatred of the Portuguese and a general running to anarchy ; on the other hand an equal hatred for the liberals and all sorts of oppressions. The prisons and prison-ships were crowded with rebels and “suspects,” who died there by hundreds ; for years the city and country were full of tu-

mults. The Canon Baptista Campos had returned from Rio, and now took the lead of the extreme liberal party. With the abdication of Pedro I., and the regency, there came new disorders. There was an insurrection in August, 1832, and another in April, 1833; then, after half a dozen changes, there came an unpopular president, Lobo de Souza, from Rio de Janeiro. This man succeeded in stirring the people to a new revolt; one of their leaders, Lieutenant-colonel Malcher, was imprisoned; finally, on the 7th of January, 1835, a great mob of liberals, led by a Sergeant Gomes, overran the city; murdered the president and the military commandant, as well as a score of Portuguese merchants; released Malcher from prison and placed him in the presidency, on the understanding that he was not to be superseded from Rio until the majority of Pedro II. One Francisco Pedro Vinagre, a rubber trader, was placed at the head of the troops. This man was a mere anarchist; he presently quarrelled with the new president, incited his partisans against him, and after a three days' battle in the streets, Malcher was deposed and murdered, and Vinagre took his place; subsequently he gave up the city to another president, Rodriguez, from Rio. Vinagre himself was then imprisoned, a measure which infuriated the populace to the highest degree. They called to their aid the ignorant Indian and negro population; a host of these *cabanaes* assembled in the outskirts of Pará. Vinagre's brother, in the name of the crowd, three times demanded the release of their leader; and when this was peremptorily refused, the whole rabble poured in upon the city like an avalanche. Now the cry was "Death to the whites!" and "Death to the freemasons!" For nine days there was a horrible battle in the streets. Vinagre himself was killed. Aid for the law-abiding party was sent from English and



French vessels in the river, but the president was too cowardly to avail himself of it. In the end, every respectable white was obliged to leave the city; many escaped on board vessels in the river, and finally to the island of Tatuoca, some miles below. There, it is said, five thousand persons died of disease and starvation.\*

Rodriguez made occasional raids on the cabanaes; but the city was given up to complete anarchy. Disorders broke out among the rebels, and mutual assassinations became common. "Business was effectually broken up, and the city was as fast as possible reverting to a wilderness. Tall grass grew up in the streets."†

The cabanaes overran the whole province except Cametá and the region above the Rio Negro. A more frightful civil war has never been recorded. This was not merely a war between two sections; it was a struggle of parties, neighbor against neighbor, a massacre in the streets, a chasing through the forests and swamps. To this day old men will tell you brave stories of the great rebellion; how they fought hard with this or that party; how brothers were killed and families driven away; how men were shot down by scores because they would not renounce their partisan tenets.

In April, 1836, President Andréa arrived from Rio de Janeiro, and drove out the rebels; gradually the interior towns gave way, but it was a long time before the excitement subsided. Even now one hears of the extreme republicans or communists, but it is difficult to estimate their real force. Hatred to the Portuguese is still a part of their creed; the overturning of both church and state power seems to be their ultimate object. Now and then they issue an incen-

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\* Edwards: *Voyage up the Amazon*, p. 16.

† Kidder: *Sketches in Brazil*, 1st edition, vol. ii., p. 318.

diary placard, warning their opponents to "remember the days of '35." Party spirit runs high ; often the elections end in an uproar ; but beyond these ebullitions the province has been quiet from 1836 until now, and it would be wrong to judge the Brazilian character by those sad days. The people are hot-headed ; in the excitement of political strife they were carried to deeds which they would not have dreamed of in sober moments ; as for the Indians and blacks, they followed in the wake of their leaders, and, being ignorant, often went beyond them in cruelty, as a child is more unreasoning in its passion than a man. They are tame enough now, and very good and quiet people, as we shall find them in our travels. The lower classes are no more to blame for tumults than waves are for beating down a lighthouse.

With all these storms Pará has gone on slowly ; the metropolis of the Amazons, she is still a city of forty thousand inhabitants, at most. Aside from her most important export—rubber—she sends us Brazil-nuts, cacáo, and various drugs ; but sugar, coffee, and cotton are largely exported from the south, and the immense riches of Amazonian timber are untouched.

The time must come when all these things, and more, will fill the markets of Pará ; when the Pacific republics will make the Amazons and its metropolis the guardians of their commerce. The northern channels are more or less obstructed near the mouth, and the furious currents make it difficult for vessels to enter ; it is not probable, then, that Macapá or other northern ports will ever offer any serious rivalry to Pará. As commerce increases a new port will be formed, eight or ten miles below the present one, where the banks are high and the river deep enough for the largest steamers.

Already there is a much-talked-of project for building a railroad to this point ; when this is done the old city will still be the residence of the richer classes, but foreign trade will all turn to the new harbor.

Soon or late the future of Pará is secure. A century hence the ships of all nations will crowd to her wharves, bearing away the riches of half a continent. Assuredly it will be our fault if we do not profit by the commercial centre that is forming so near us. To turn this tide of wealth to our own doors, while yet the stream is small, is a problem that may well engage the attention of our rulers and of every thoughtful American.

## CHAPTER III.

### THE RIVER-PLAIN.

WE have come to the Amazons, not as sight-seers merely, but to study the great valley—to get an intelligent idea of the country. Our first step, then, is to distinguish between the main-land and the flood-plain; we must divide these two in our minds as sharply as they are divided in nature. The main-land is always beyond reach of the floods, though it may be only a few inches above them; it has a foundation of older rock, which crops out in many places. The flood-plain, on the contrary, has clearly been formed by the river itself; its islands and flats are built up of mud and clay, with an occasional sand-bank; but they are never stony, and only isolated points are a few inches above the highest floods. In their plants and animals the two regions are utterly distinct—as much so as America and Europe; yet we shall find some resemblances that are full of interest. Having separated our two worlds, we must trace out their connections and mutual dependencies.

I have used the term “main-land,” as the Brazilians use *terra firme*, in contradistinction to the *varzeas*, or *vargens*, flood-plains. But we must remember that bits of *terra firme* may be cut off to form islands in the river or in the flood-plain; and, *vice versa*, great tracts of *varzea* are often joined

to the high land. The division is one of structure, not of form.

In this chapter we have nothing to do with the higher land ; our first rambles will be among the islands and channels of the varzeas, with their swampy forests, and great stretches of meadow, and half-submerged plantations. These plains are not a distinctive feature of the Amazons. Nearly all great rivers have flood-lands near their mouths ; on the Lower Mississippi, for example, there are wide reaches of swamp-land, with a net-work of bayous and lakes. But on other streams the plains narrow off as we ascend, and are soon lost ; on the Amazons alone they extend almost to the head-waters, as if a sea had been filled in, leaving deep ditches for the water-flow and countless pools over the surface. From Manáos to the Atlantic the width of this alluvial flat varies from fifteen miles to a hundred or more ; on the Upper Amazons it is probably still wider ;\* only as we approach the Andes, the rocky shores are narrowed to the main stream.

We leave Pará with the midnight tide ; by gray morning we are steaming across the Bay of Marajó, which is not a bay at all, but properly a continuation of the Pará river, or its connection with the Tocantins. The wind blows briskly over the wide reaches, swaying our hammocks under the arched roof of the upper deck ; we roll our blankets closer around us, and let who will retreat to the stifling state-rooms. But if Boreas cannot unwrap us, Phœbus brings us out quickly enough ; we jump up with the sun shining in our eyes, and all around the bright waves leaping and dancing for joy to see the beautiful morning.

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\* I am not personally familiar with the river above Obidos.

We have a dozen fellow-passengers, such people as you will see on any of the Amazonian steamers ; most of them are traders from the river-towns, or government officials—good-natured people, and not unpleasant companions, though their ideas of refinement are crude enough ; one or two, however, are of the educated class, intelligent and gentlemanly. As for the ladies, they keep to their cabin for the most part, only coming out bashfully at meal-time. The absence of ceremony on board is very enjoyable. We lounge in our hammocks during the hot hours, smoke, and read, or watch the shores. Our table is spread on deck, breakfast at ten o'clock, dinner at four, and tea at seven ; aside from the peculiar Brazilian cookery, we have no fault to find with the food, which is good\* and plentiful ; the second- and third-class passengers, a hundred or more, fare much worse. The steamboat itself is of English build, and rather old-fashioned ; latterly a few American vessels have been introduced, and if these give satisfaction, the Brazilian companies are likely to buy of us hereafter.

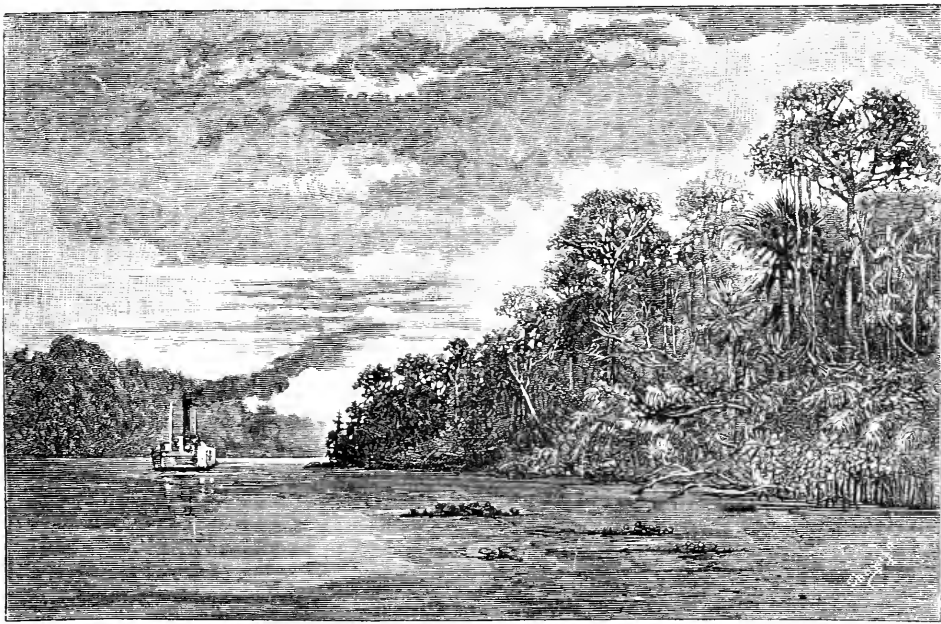
Marajó Bay is broader even than the Amazons ; there are great reaches of open horizon up the Tocantins and off toward the sea. But farther on we enter the system of passages that separate Marajó Island from the main-land, where the steamer keeps close to the forest-clad shore. The opposite shore may still be a quarter of a mile away, although these channels are generally described as only just wide enough for the steamer to pass through them ; a natural mistake, because the towering forest makes them look narrower. Most of them are as broad as the Hudson at Albany.

Any one who is not blind must feel his soul moved within

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\* On some boats. But the Amazonian Company should reform the service of certain vessels.

him by the marvellous beauty of the vegetation. Not a bit of ground is seen ; straight up from the water the forest rises like a wall—dense, dark, impenetrable, a hundred feet of leafy splendor. And breaking out everywhere from among the heaped-up masses are the palm-trees by thousands. For here the palms hold court : nowhere else on the broad earth is their glory unveiled as we see it ; soft, plummy *Jupatis*,\*



Breves Channel.

drooping over the water, and fairy-light *assais*† and *bussús*‡ with their light green, vase-like forms, and great, noble, fan-leaved *miritis*§ looking down from their eighty-feet high columns, and others that we hardly notice at first, though they are nobles in their race. If palms, standing alone, are esteemed the most beautiful of trees, what shall we say when their numbers are counted, not by scores, nor hundreds, but by thousands, and all in a ground-work of such forest as is

\* *Raphia tedigera*.† *Euterpe edulis*.‡ *Manicaria saccifera*.§ *Mauritia flexuosa*.

never seen outside of the tropics? The scene is infinitely varied; sometimes the palm-trees are hidden, but even then the great rolling mass is full of wonderful changes, from the hundred or more kinds of trees that compose it; and again the palms hold undivided sway, or only low shrubs and delicate climbing vines soften their splendor. In most places there are not many large vines; we shall find their kingdom farther up the river, and on the highlands; here we sometimes notice a tree draped with pendent masses, as if a green tapestry were thrown over it. Down by the water's edge the flowering convolvuli are mingled with shield-like leaves of the arborescent arums,\* and mangroves standing aloft on their stilt-like roots, where they are washed by the estuary tides.

The Indian pilot points out numbers of rubber-trees,† and we learn to recognize their white trunks and shining bright green foliage. This low tide-region is one of the most important rubber districts, where hundreds of *seringueiros* are employed in gathering and preparing the crude gum. Occasionally we see their thatched huts along the shore, built on piles, and always damp, reeking, dismal, suggestive of agues and rheumatism; for the tide-lowlands, glorious as they are from the river, are sodden marshes within, where many a rubber-gatherer has found disease and death.

The little town of Breves owes its prosperity to this dangerous industry. It is built on a low strip of sandy land, with swamps on either side coming close up to the town; even along the water-front the main street is a succession of bridges. But the houses are well built of brick or adobe,

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\**Caladium arborescens*, etc.

†*Siphonia*: several species are admitted, of which this appears to be the true *S. elastica*.



and the stores contain excellent stocks of the commoner wares. The place looks fresh and pretty enough ; the miasma of the swamps does not often rise to the highlands, so we are not loath to remain here for a few days and study the rubber industry more closely.

In the river-towns there are no hotels ; but we are provided with a letter of introduction, which insures us a hearty welcome and a home as long as we care to stay. For the Amazons is a land of hospitality. Out of Pará, a stranger, even unIntroduced, will always find shelter and food, and for the most part without a thought of remuneration ; but, if on a longer stay he occupies a house of his own, he will be expected to extend the same hospitality to others.

The rubber-swamps are all around, but land travelling is out of the question. So an Indian canoe-man is engaged,—a good-natured fellow, and an adept in wood-craft. He sets us across the river at a half-ruined hut, where bright vines clamber over the broken thatch and hang in long festoons in front of the low door-way ; but within, the floor is sodden black clay, and dark mould hangs on the sides, and the air is like a sepulchre. The single slovenly *mameluca* woman who inhabits the place complains bitterly of the ague which tortures her ; yet, year after year, until the house falls to pieces, she will go on dying here, because, forsooth, it is her own, and the rubber-trees are near. She will not even repair the structure. You can see sky through the roof ; but if rain drives in she will swing her hammock in another corner, and shiver on through the night as best she may ; for to-morrow there are rubber-trees to be tapped, and a fresh harvest of the precious milk to be brought home,—and what will you have ? One must expect discomfort in a swamp.

Back of the house the rubber-trees are scattered through

marshy forest, where we clamber over logs, and sink into pools of mud, and leap the puddles ; where the mosquitoes are blood-thirsty, and nature is damp and dark and threatening. Where the silence is unbroken by beast or bird—a silence



The Rubber-Gatherer.

that can be felt ; it is like a tomb in which we are buried, away from the sunshine, away from brute and man, alone with rotting death. The very beauty of our forest tomb makes us shudder by its intenseness.

In the early morning, men and women come with baskets of clay cups on their backs, and lit-

tle hatchets to gash the trees. Where the white milk drips down from the gash they stick their cups on the trunk with daubs of clay, moulded so as to catch the whole flow. If the tree is a large one, four or five gashes may be cut in a circle around the trunk. On the next day other gashes are made a little below these, and so on until the rows reach the ground. By eleven o'clock the flow of milk has ceased, and the *seringueiros* come to collect the contents of the cups in calabash jugs. A gill or so is the utmost yield from each tree, and a single gatherer may attend to a hundred and twenty trees or more, wading always through these dark marshes, and paying dearly for his profit in fever and weakness.

Our *mameluca* hostess has brought in her day's gathering—a calabash full of the white liquid, in appearance precisely like milk. If left in this condition it coagulates after a while, and forms an inferior whitish gum. To make the black rubber of commerce the milk must go through a peculiar process of manufacture, for which our guide has been preparing. Over a smouldering fire, fed with the hard nuts of the *tucumá* palm,\* he places a kind of clay chimney, like a wide-mouthed,



Preparing Rubber.

bottomless jug; through this *boiã* the thick smoke pours in a constant stream. Now he takes his mould—in this case a wooden one, like a round-bladed paddle—washes it with the milk, and holds it over the smoke until the liquid coagulates. Then another coat is added—only now, as the wood is heated, the milk coagulates faster. It may take the gatherings of

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\* *Astrocaryum tucumá*. A common substitute is the fruit of some *Attalia*.

two or three days to cover the mould thickly enough. Then the rubber is still dull white, but in a short time it turns brown, and finally almost black, as it is sent to the market. The mass is cut from the paddle and sold to traders in the village. Bottles are sometimes made by moulding the rubber over a clay ball, which is then broken up and removed. Our old-fashioned rubber shoes used to be made in this way.

During the wet months, from February until June or July, this ground is under water, and the *seringaes* are deserted by every one. The floods would not entirely interrupt the gathering, were it not that the gum is then weak, and of comparatively little value. Besides, the trees need this period of rest to make up for the constant summer drain. The rubber months, then, are from June or July until January or February, varying somewhat with the year and the district. During this period, many thousand persons are employed in tapping the trees. All of them are of the poorer class—Indians, mulattoes, and Portuguese immigrants, who like nothing better than this wandering, half-vagrant life.

Around Breves, rubber is almost the only product of the lowlands;\* the whole region is simply an endless succession of channels, and small lakes, and swamps covered with forest—beautiful beyond thought from without, a dismal wilderness within. From the village we could take canoe-trips in almost every direction, and return by different routes to our starting-point; or we could spend days in voyaging, and never re-pass a place.

If we could only transport some of this forest to a northern park! If we could bottle up the sunshine and let it

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\* When planted, however, the tree will grow on the *terra firme*. The seeds are floated about in the water, and naturally lodge in the lowland swamps.

loose in Broadway ! Our canoe passes along by shores where we would fain pause at every turn to catch some new effect of light and color ; and as we are looking at the opposite side, our man may keep the boat steady by holding on to a palm-tree or an arum-plant which would draw half the people in New York to see it, if we could set it in one of the squares.

And now we turn into a narrow channel, a mere cleft in the forest-wall ; it is not more than ten yards wide, but, as in all these forest streams, the depth is considerable ; hence, the Indians call such channels *igarapés*, literally, canoe-paths. There is a richness about all water-side vegetation that makes even our northern woodland streams superbly beautiful ; but here the foliage is far thicker and more varied, and, among the dark leaves, drooping palm-fronds and great glossy wild bananas spread their warm tropical splendors. One thinks of a temple : the arching boughs, the solemn cathedral shade, the sunshine breaking through to cast long trails on the quiet waters and drop golden glories over the tree-trunks and crooked water-washed roots, while tiny leaflets catch the glow and shine like emeralds and diamonds in the dark forest setting. Even the Indian boatman dips his paddle noiselessly, as if he feared to disturb the Sabbath stillness. There is not much of animal motion ; only now and then a brown thrush crosses the stream, or a *cuajudá* bird sounds his shrill alarm from the tree-tops, or great butterflies come waving along like blue silken banners, casting vivid reflections in the water, so bright are their glossy wings. But we must learn that solitude, not life, is the grand feature of these forests.

The Breves swamps are a type of that great region which I may call the tide-lowlands. Nearly all the alluvial plains

about the Pará and Lower Tocantins are of this character ; along the southern side of the Amazons the same features are seen almost to the Xingú ; swampy forests cover the southwestern half of Marajó ; and beyond the Amazons there are other tracts on the northern side. Everywhere one finds damp woods like these of Breves, with numberless palms,\* abundance of rubber-trees, mangroves along the shores, and so on. This land is flooded every year, as the rest of the varzeas are ; but besides this, the tides sweep through the channels every day, and overflow much of the ground, so that it is always wet. Rich vegetation and fever-breeding malaria depend alike on these daily soakings.

Breves is built on one of those spots of *terra firme* which are found along the southern and eastern side of Marajó, almost to the ocean. Most of them are occupied by little villages—trading-places for rubber and cattle. Beyond these the whole island belongs to the flood-plains, about equally divided between forest and meadows. The former is the tide-lowland region which we have been exploring ; the latter occupy the northwestern half of the island—great level reaches, where thousands of cattle are pastured in the dry season. On the meadows there are little clumps of trees at long intervals ; sometimes these *ilhas de mato* form lines that seem to be impenetrable forests ; but often the plain will be unbroken to the horizon—“ a tranquil sea, where the geogra-

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\* The palms of the tide-lowlands, so far as I know them, are as follows :

Mauritia flexuosa ;	Irartia exorrhiza ;
Mauritia carana ;	Leopoldinia pulchra ;
Euterpe edulis ;	Desmoncus sp. ;
Bactris maraja ;	Rhaphia tedigera ;
Ostrocaryum murumuru ;	Manicaria saccifera.
Enocarpus sp. ( <i>Pindassii</i> ) ;	

The two latter seem to be peculiar to this region.

pher can take his astronomical observations as easily and securely as on the ocean itself." \*

The meadows themselves are flooded only during the rainy months; then canoes, and even small steamers, can pass over them. The cattle fazendas are abandoned; herds are driven to the highest points; the few people who care to remain are tortured with fever and mosquitoes, and they can only pass about in canoes. "In half-flooded places," says Penna, "you will sometimes see a small canoe tied to the tail of an ox, and dragged thus through the water, while the owner sits on board and guides the animal."

In the dry season the meadows themselves are never muddy, but they are interrupted here and there by strips of marsh-land. These marshes are not at all like our Breves swamps; they are full of arborescent arums† and other broad-leaved plants, thickets ten or twelve feet high; but there is no forest, unless in little patches. The swamps and channels are the breeding-places of numberless wading and swimming-birds, and of alligators and snakes not a few. Mr. Edwards will pardon me for quoting his bright description of one of these places:

"Turning suddenly, we left the bordering forest for a cane-brake, and instantly broke full upon the rookery. In this part the scarlet ibises, particularly, had nested; and the bended tops of the canes were covered by half-grown birds in their black plumage, interspersed with many in all the brilliance of age. They seemed little troubled at our approach, merely flying a few steps forward, or crossing the stream. Continually the flocks increased in size; the red birds became more frequent, the canes bent beneath their weight like reeds. Wood-ibises and spoonbills began to be numerous. The nests of these filled every

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\* D. S. Ferreira Penna: A Ilha de Marajó, p. 17.

† *Caladium arborescens*.

place where a nest could be placed ; and the young ibises, covered with down, and standing like so many storks, their heavy bills resting upon their breasts, and uttering no cry, were in strong contrast to the well-feathered spoonbills, beautiful in their slightly roseate dress, and noisily loquacious. Passing still onward, we emerged from the canes into trees ; and here the white herons had made their homes, clouding the leaves with white. We wandered a long distance back, but the nests seemed, if anything, more plentiful, and the swarms of young more dense. At the sound of the gun the birds in the immediate vicinity rose in a tumultuous flock, and the old ones circled round and round, as though puzzled to understand the danger they instinctively feared. In this way they offered beautiful marks to our skill ; and the shore, near the canoe, was soon strewn with fine specimens. Evidently this place had been for many years the haunt of these birds. Not a blade of grass could be seen ; the ground was smooth and hard, and covered with excrement.

“Occasionally, and not very rarely, a young heedless would topple into the water, from which the noses of alligators were constantly protruded. Buzzards, also, upon the bank, sunned themselves and seemed at home ; and not unfrequently a hungry hawk would swoop down, and away with his prey almost unheeded.

“It was late when the tide turned, and we hastened away, with the canoe loaded to overflowing. The birds seemed now collecting for the night. Squads of bright-colored ones were returning from the shore, and old and young were settling on the canes over the water, like swallows in August. An alligator gave us an opportunity for a last shot, and the air was black with the clouds of birds that arose, shrieking and crying. I never conceived of a cloud of birds before.”\*

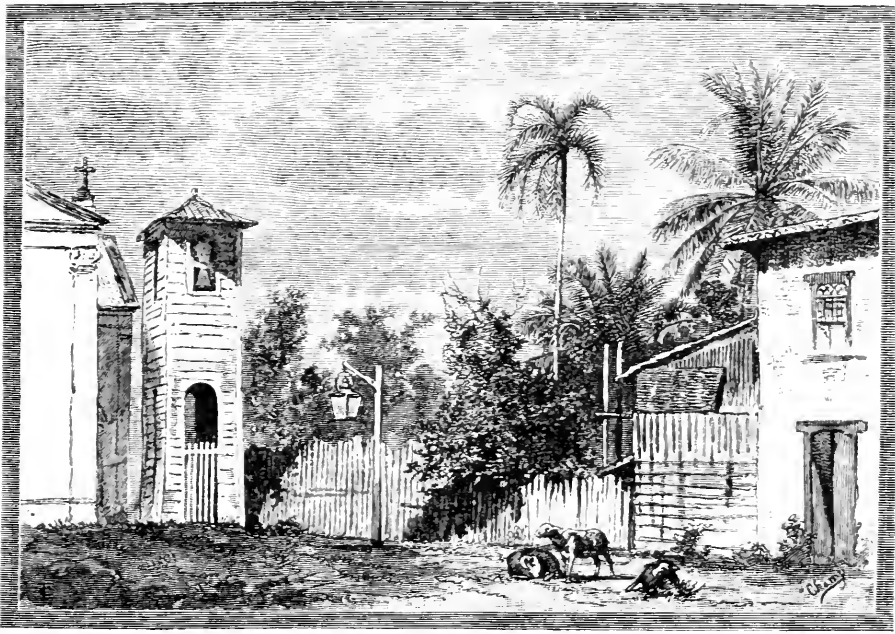
Marshes among the meadows are called *baixas*, to distinguish them from the forest swamps, or *ygapós*. Sometimes, also, the name *mondongo* is used, but this belongs especially to a great marshy tract running through the centre of the island. It is a dreary solitude, full of alligators and

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\* Edwards : A Voyage up the River Amazon, p. 242. The book was out of print long ago ; it deserves a new edition.



mosquitoes without number. Sr. Penna concludes, with much reason, that it is an old channel of the Amazons, which has been filled up and converted into swamp. Most of the *baixas* were formed in the same way, by the filling in of lakes and channels, and the invasion of aquatic plants over the shallows; many have been so covered within historical times. There are still a number of small lakes; a larger one, Arary, is almost in the centre of Marajó; within



At Breves.

this lake there is a small island, celebrated for the ancient Indian utensils which are found on it.\*

I wish we had time to explore the island; but the steamer is here to take us away from Breves. We carry off a thousand pleasant memories, and, as souvenirs, a lot of the fearfully ugly painted pottery for which the place is famous.

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\* Some of this pottery was described and figured by Prof. C. F. Hartt, in the *American Naturalist*, July, 1871, and several Brazilian authors have treated of it.

Our good host comes down to the wharf to see us off, and to assure us once more that his house is always "*às suas ordens*," whenever we care to return to it. May he always find hearts as kindly as his own ! \*

We must travel all night yet, before we emerge from the Breves channels into the broad northern stream. But we reach it at last—the giant Amazons, the river of Orellana, and Acuña, and Martius—the river with the destinies of a continent in its future. Five miles broad its yellow waters sweep toward the sea ; east and west there are open horizons, where the lines of forest are lifted by the mirage and broken into clumps and single trees until they are lost in the sky. On either side there may be two or three other channels, for not a glimpse of northern or southern highland is seen over the dead level of the *varscas*. No danger of running aground here. Along the sides our charts may mark twenty, thirty, forty fathoms ; but out in the middle it is always "*ha muito fundo* ;" in the strong current the bottom is unattainable by ordinary instruments. The snows of half the Andes are flowing here, the drainings of a region as large as the United States.

The steamer passes from one side to another as we touch at the river-towns ; mere hamlets, specks in the wilderness. Most of them are on the terra firme, but hardly raised above the flood-plains. Frequently we stop to take in fuel at some *fazenda*, where the wood that is put on is counted slowly, stick by stick. After passing the mouth of the Xingú, we see the flat-topped hills on the northern side, like a line of mountains, all cut off at the same level.

They are twenty miles away ; between them and the main

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\* I am glad to acknowledge the extreme kindness of this gentleman—Dr. Ludgero de Almeida Salazar.

river there is a great belt of netted flood-plain—in this district, as on the northeastern part of Marajó, covered, for the most part, with grass-growth. Yet we do not see this; from the river there is only the same succession of forest-lined varzeas, with banks cut so steeply that our steamer can keep close in shore; sometimes we almost brush the foliage. In most places, if we land from the main river or a side channel, we find, not marshes, as at Breves, but comparatively high land, running along the shore. The great trees are festooned with vines, and thick-leaved branches reach out over the water; but there is not much undergrowth, and we can easily walk inland. We find that, after a little space, the ground slopes gradually *away* from the river; two or three hundred yards from the bank the belt of forest ceases, and we come out suddenly on a great stretch of meadow, or a lake, the farther shore of which is lost on the horizon.

To explain these features, we must remember that the islands and flats have been formed by the river itself. Every year, in February and March, the Amazons rises to a height of thirty feet or more above its ordinary level, and overflows the meadow-land in all directions. Now, in the river, the particles of mud and clay are held in suspension by the swift current; but as the water flows over the meadows it becomes quiet, and the particles sink to the bottom. Naturally, the coarser detritus is deposited first, near the river, and at last it builds up a ridge, as we have seen. When fully formed, the top of the ridge, in some places, is just out of reach of the highest floods. The meadows, being lower, are flooded during several months. They are alternately soaked and baked; hence the forest trees will not grow on them, but they flourish well on the banks, where their roots are only covered during three or four weeks of each year.

The raised borders are the farming-lands of the varzeas. Along the Middle Amazons most of the available portion is now private property. Corn, cotton, sugar-cane and tobacco all grow well here ; mandioca, which on the highlands requires more than a year to mature its roots, yields rich harvests on the plains with six months of the dry season. But between the Rio Negro and the Xingú, the most important lowland crop is cacáo. It is true, the trees will grow quite as well, or better, on the terra firme ; but Brazilians prefer the varzeas for their plantations, because the ground is easily prepared and takes care of itself ; besides, the orchard arrives at maturity much sooner. We hardly notice these cacáo plantations from the river, the dark green of the foliage is so like the forest ; and generally there are other trees near the shore. But for miles the banks are lined with them, mostly the orchards of small proprietors, who own a few hundred *pés* of cacáo ; some of the estates, however, have twenty or thirty thousand trees.

The high varzeas are healthful enough ; unlike the Breves tide-plains, malarial fevers are not at all common here. But life on the cacáo-plantations has one great drawback. All the tigers and anacondas in Brazil can never compare to the terror of the mosquitoes ; not one or two serenaders, piping cannily about our ears, but swarms of them—blood-thirsty monsters, making straight at face and hands with a savage desire to suck our life out of us. At night the houses must be closed tightly, and even then the little torments come in through every chink, making life a burden to a sensitive man. And yet, in justice to the Amazonian mosquito, I must say that I have never found his bite half so virulent as that of his cousin in the Jersey swamps ; after a day in the forest, where one is constantly exposed to their attacks, all

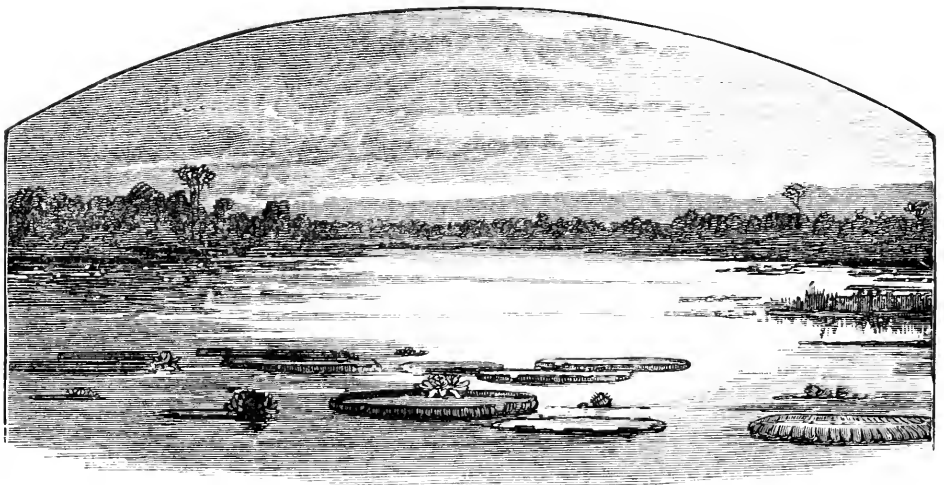
irritation is removed by a cold-water bath. Nor must one infer that these pests are everywhere; they keep to the woods, only coming out at night; at Pará and Breves we saw very few of them, and in the thick forest of the highlands, away from the channels, they are hardly noticed.

Back from the river we can ride for miles over the great breezy meadows, only we must make long detours to avoid the lakes and swampy forests and clumps of shield-leaved arums. There are a thousand beautiful things to see on these campos; bright yellow and white flowers dotting the surface, pretty warblers and finches, and whistling black *japús*, little fishes in the pools, and brilliant dragon-flies entomologizing over the reeds; drooping bushes with wonderfully delicate, feathery leaves all spread out gratefully to the sun; but if you jar the branch roughly, they close and bend down in sad, mute remonstrance, the protest of their helplessness against our brute strength. I must needs be tender with the sensitive plants; there must be a higher power than mine watching over them. For every night they fold their hands and bow their heads in silent prayer, and so sleep calmly under the gentle dews; every morning they lift themselves, with silver tears of thanksgiving, to the bright sunshine and the soft east wind.

Near the main channels the meadows are much broken by these bushes and swamps; but far back, and sheltered in bays of the highland, they are as level and clean as a wheat-field, bright velvety green, rippling with the wind like a great lake. Everywhere the grass is dotted with cattle. Such places, indeed, owe their beauty to the yearly fires with which the herdsmen cleanse their surface. They are the favorite pastures, and most of them have been absorbed into the estates of large proprietors.

Climbing the heights of Monte Alegre, we look off over great stretches of the meadow-land, threaded by channels, and dotted with little quiet lakes. The eye strives in vain to unravel the intricacies of this vast net-work. The lakes are mere shallow depressions in the meadow-land ; some of them dry up entirely in September and October, or remain only as rows of pools and swampy flats ; many, even of the larger ones, are so shallow that in the dry season canoes are poled across them ; five miles from shore a man can stand on the bottom with head and shoulders above water, and one might wade across, but for the alligators and the fierce little cannibal fishes.

The smaller lakes are innumerable ; in fact, there is every gradation in size, down to pools and puddles. Sometimes



Victoria regia.

our canoe-men can hardly push their way through the thick growth of aquatic plants ; or, where the waters are still, we hold our breath to see the eight-feet-broad leaves of the *Victoria regia*, and its superb white and rosy flowers.\* Nearly

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\* I have measured flowers which were eleven and one-half inches in diameter.

all the lakes are connected with the rivers, often by very long and tortuous channels—forest-covered creeks, or passages in the open meadow, or wider *igarapés* lined with soft plummy bamboos and graceful *carandá* and *javary* palms. Where the banks are shelving, great flocks of herons gather to fish in the shallow water, flying up in snowy clouds before the canoe; roseate spoonbills spread their wings like flashes of sunset; egrets and bitterns hide in the tall grass. I love best to pass through these channels in the early morning, when the palm-tops are sharply defined against the deep blue sky, and the bamboos look white in contrast to the shadows beneath them, and the rising sun intensifies the picture with its wonderful richness of light and color. Then the wind blows freshly across the meadows, rippling the young grass; parrots and macaws come flying over the lowland in pairs, screaming loudly; toucans call from the solitary trees, and small birds innumerable keep up a ringing concert. They are all so happy to see the day, so brimming over with the gladness of life!

Heaven forgive me for my ingratitude! Even among the home friends I am forever panting to get back to my forests and streams. I am half minded to buy a wooden canoe and a fishing spear of the first Indian we meet, and to go sailing away, away, among the crooked channels and sunny lakes, until I lose myself in their intricacies. One could live a hermit, and plant mandioca, and catch fish as the Indians do, and be at rest. Ah well! I know that there are blood-thirsty mosquitoes there, and fevers in the swamps, and dreary solitudes everywhere. I know that I would die in a month of fatigue and exposure. I must needs content myself, with the rest, watching the fishermen and half envying them in my heart.

In the summer the Indians come by hundreds to the lakes and channels, to fish for the great *pirarucú*,\* and to prepare the flesh, just as codfish is prepared on the Newfoundland banks. They build little huts along the shores ; trading canoes come with their stock of cheap wares to barter for the fish, and a kind of aquatic community is formed, which breaks up with the January floods.

Besides the *pirarucú*, the lakes swarm with smaller fishes innumerable. The Indians catch them with a line, or spear



The Pirarucú Fisher.

them with tridents ; in the small streams they are shot with arrows—an art which requires peculiar skill, since one must allow for the refraction of the water. Even the little brown urchins take lessons by hooking the hungry *piranhas*, which will bite at anything, from a bit of salt meat to a bather's toe.

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\* Sudis.



Our northern trout-fishers are scandalized to see these boys thrashing the water with their poles to *attract* the piranhas.

This is the dry season, the time of plenty. With the heavier rains of January the river rises rapidly ; by March it has overspread the lowlands like a sea, a vast sheet, two thousand miles long and thirty or forty in average width, with only lines of forest and floating grass marking the limits of lakes and channels ; canoes pass almost straight across, the men pushing with poles through the floating grass ; “ a voyage overland,” Mrs. Agassiz called it. At the height of the flood-season, even the raised borders are submerged, except little spots where the planters build their houses.

Many of the meadow-plants are in bloom at this time ; yellow, crimson, white, dotting the water like stars. Everywhere, too, the floating grass swarms with animal life. There are the brown “ ramrod chickens,” *piassoccas*,\* running across the lily-leaves ; their long toes spread over a large surface, so that they do not sink. Herons and egrets have retired to the main-land, but there are plenty of warblers and tanagers about the reeds ; great dragon-flies dart about, or sit watchfully on the very tip of a twig ; the agrions, their slender cousins, cling to grass-stalks, and you may see them crawling down into the water to lay their eggs, their pretty wings glistening the while like silver. At the bases of the leaves there are beetles, *Carabidæ* and *Steni*, which at the north live along muddy shores ; pale, slender locusts also, and katydids, well concealed by their colors. These lie still all day, but at night they are uproarious, singing treble to the bass of frogs and the tenor of crickets. Brilliant spiders spin webs for the unwary green flies. Whole colonies of the little red

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\* Parra jacana.

fire-ants are driven out of their nests ; they collect in balls on the tips of grass-stalks, and so live, uncomfortably, until the waters subside ;\* they swarm over our canoe at times, and punish us savagely with their red-hot stings. The water, filtered through the grass, is very clear, and wholesome to drink. Down among the stalks we see the fish moving about : slender sarapós, acarís in bony armor, and numbers of brilliantly colored *Cyprinodonts*. As the waters recede, many of these remain in pools about the meadows, and the Indians catch them by scores in nets or baskets.

Above Obidos the flood-plain is occupied by swampy forest—*ygapó* the Indians call it—much like that about Breves ; but this, of course, is out of reach of the tides. Every year it is flooded ; then boats pass through everywhere between the tree-trunks. Mr. Wallace speaks of such a journey :

“ On crossing the Rio Negro from Barra, we entered a tract of this description. Our canoe was forced under branches and among dense bushes, till we got into a part where the trees were loftier and a deep gloom prevailed. Here the lowest branches were level with the surface of the water, and many of them were putting forth flowers. As we proceeded, we sometimes came to a grove of small palms, and among them was the marajá, bearing bunches of agreeable fruit, which, as we passed, the Indians cut off with their long knives. Sometimes the rustling of leaves overhead told us that monkeys were near, and we would soon, perhaps, discover them peeping down from among the thick foliage, and then bounding away as soon as we had caught a glimpse of them. Presently we came out into the sunshine, in a little grassy lake filled with lilies and beautiful water-plants : little yellow bladder-worts (*Utricularias*), and the bright blue flowers, and curious leaves with swollen stalks, of the *Pontederias*. Again in the gloom of the forest, among the lofty cylindrical trunks rising like columns out of the deep water ; now a splash-

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\* *Myrmica Sævissima*. A similar habit is recorded of an African ant.

ing of falling fruit around us would announce that birds were feeding overhead, and we would discover a flock of paroquets, or some bright blue chatterers, or the lovely pompadour, with its delicate white wings and claret-colored plumage ; now, with a whirr, a trogon would seize a fruit on the wing, or some clumsy toucan would make the branches shake as he alighted.

“In the ygapó peculiar animals are found, attracted by the trees which grow only there. Many species of trogons are found only here ; others in the dry virgin forest. The umbrella chatterer is entirely confined to the ygapó, as is also the little bristle-tailed manakin. Some monkeys are found here only in the wet season, and whole tribes of Indians, such as the Purupurús and Muras, entirely inhabit it, building small, easily removable huts, on the sandy shores in the dry season, and on rafts in the wet ; spending a great part of their lives in canoes, sleeping suspended in rude hammocks from trees over the deep water, cultivating no vegetables, but subsisting entirely on the fish, turtle, and cow-fish which they obtain from the river.” \*

To recapitulate : We have found three great divisions of the river-plain—the tide-lowlands, the forest-lined varzea meadows, and the flooded woods of the Upper Amazons. Of these, the first is pretty well defined by its geographical position about the mouth of the river. The varzea meadows occupy all the rest of the Lower Amazons, and as far up at least as Obidos ; they are generally bordered with woods, as we have seen, and these woods are composed of a different set of trees from those of the tide-lowlands, or the Upper Amazons ygapós ; to this class, also, belong the *ilhas de mato*, isolated clumps of higher forest in the meadows ; and even large islands may be covered with a similar growth. The third division, that of ygapós, occupies nearly all of the Upper Amazons flood-plain ; but there are occasional strips of grass-land interspersed, and, *vice versa*, spots of ygapó

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\* Amazon and Rio Negro, p. 176.

occur in the varzea meadows below, where lakes have been filled in ; beyond this, the division is very well marked. The trees of the ygapó are in great part like those of the tide-lowlands, but each division has a few peculiar species. Of course, there are subdivisions without number, depending on slight differences of level, and the nearness to or distance from the river ; but we need not concern ourselves with these at present.

The whole flora of the lowland is distinct from that of the terra firme. Only in swamps of the highland, and along streams, we find a few of the varzea trees, and there are rare exceptions of species that grow indifferently on all sorts of ground.\*

Comparing the varzea trees with those of the terra firme, we are struck at once with their general resemblance. The *species* are different, but the *genera* are commonly the same. The Indians recognized this long ago ; they classify trees, but distinguish them closely. Thus, your woodsman will tell of one *taixí* on the varzea, and another on the highland ; there are varzea *cedros*, † *ingás*, ‡ and so on. Among palms the familiar varzea *javary* § can hardly be distinguished by a novice from the highland *tucumá* ; ¶ and the low *curuás* ¶ of the dry forest are represented by the tall *urucury* \*\* of the raised borders. We might find a hundred more instances among trees, and not a few with smaller plants, and even animals ; thus, the varzea sloth is different from the terra-firme species, and one of the large jaguars belongs properly to the lowland. We have seen what Mr. Wallace says of the trogons.

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\* E. g., the *Sapucaia*, *Lecythis ollaria*.

§ *Astrocaryum javari*.

¶ *Attalea*, sp. var.

† *Cedrela*, sp.

¶ *Astrocaryum tucumá*.

\*\* *Attalea excelsa*.

‡ *Inga*, sp. var.

I suppose that the lowland woods have been produced by a gradual modification of highland species—a fitting for the half-submerged life that they lead, just as the tropical sheep has lost his wool, and the dog has turned white in Greenland. How many thousand years have been occupied in this change we cannot tell ; a long time it must have been, for the difference is strongly marked.

A large proportion of the lowland animals are different from those of the terra firme ; a certain number are found indifferently in both regions, but in this case they generally show a marked preference for one or the other. This is precisely what we would look for. Animals wander about ; not being confined to one region, they are not obliged to conform themselves to the physical condition of that region, as plants are ; but they frequent highland or lowland by preference, because the ground suits them, or their food is more abundant there.

Still, the difference between the two faunas is very strongly marked. I remember my surprise when I first explored the varzeas and learned this difference. I had been living on the highlands of Santarem, for six months or more, collecting insects through the dry woods, so that I was pretty familiar with this side of tropical life. One day I hired an Indian boy to set me across the river in a canoe ; there were some low islands there, with meadows and scattered trees ; the place looked so unproductive for my work that I was about to content myself with a few shells and edible crabs from the river-banks ; but some curious beetles that I found tempted me over the meadows, and so, in the end, I filled my bottles with insects, and got some valuable information besides. If this day's collection had been made on the other side of the ocean, it could not have been more completely

different from the set that I was accustomed to. And though I afterward found many species that were common to the high and low lands, I learned to separate the two sets very carefully.

In our walks over the varzea plains we may possibly see a deer, or a tapir, or a red panther, but they are only visitors; properly their home is on the terra firme. The spotted jaguar\* belongs here of right; he is a fisherman as well as a hunter, and, though he often wanders on the highland, you never find him far from water. The Indians have a curious story about his fishing. The jaguar, they say, comes at night and crouches on a log or branch over the water; he raps the surface with his tail, gently, and the *tambakis*, or other fruit-eating fish, come to the sound, when he knocks them out with his paw. I do not take it upon myself to say that this story is true, but I have heard it from all sides, and from persons who aver that they have seen the fishing.†

The *prego* monkey‡ also frequents the lowlands by preference, as the planters know too well; in the cacáo-orchards it is an arrant thief, and, not content with eating what it wants, it breaks and scatters the fruit out of pure mischief. Other monkeys are found here at times—one or two seem to be peculiar to the ygapós of the Upper Amazons.

Beyond these, we meet with two mammalian animals that are entirely confined to the flood-plain. The first is a sloth,§ the one that we have already spoken of, clearly related to the

\* *Felis onça*. We shall discuss the *Felidae* more fully in another chapter.

† They say, also, that the jaguar eats off the alligator's tail, the reptile submitting to this mutilation as a mouse submits to a cat, from mere stupefaction. It is certain that curtailed alligators are found, and, improbable as the story seems, it may be true. See, also, Wallace: *Travels on the Amazon and Rio Negro*, p. 456

‡ *Cebus cirrhifer*?

§ *Bradypus infuscatus*.

highland species, but quite distinct from it. We sometimes see the creatures on boughs of the cecropia-trees, hanging head downward, and lazily eating the leaves. The other animal is a remarkable one in many respects : *capiuára*, the Indians call it, and its English name, if it has any, is a corruption from this—*capybara*.<sup>\*</sup> It is a great, brown, stupid-looking animal, in shape much like a magnified prairie-dog. It is semi-aquatic ; the Indians hunt it, sometimes, but the flesh is little esteemed ; consequently the animal is very abundant, and ridiculously tame. Often we see them by twos and threes, wading and diving in the thick floating grass, or running about the shores, often feeding with the horses and cattle, who pay no attention to them. I have been nearly knocked over by a capybara which ran past me in a clump of high grass.

To our list of varzea mammalia we might add the Amazonian otter,† which we often see swimming in the channels, or climbing the banks, the pretty brown coats always shining and smooth as if they were oiled. But this animal is properly aquatic, and lives indifferently in the Amazons or in streams which run through high ground. On land, I think that it prefers rocky shores.

Of the lowland birds, we shall find that a large proportion are different from terra-firme forms ; not only the wading and swimming species, such as we see about the channels, but a great many arboreal kinds also. So with reptiles and batrachians : there are semi-aquatic snakes in the meadows, species that are never found in the dry woods ; at night we hear the lowland frogs piping in one chorus, but the highland toads have quite another one. We might even make a dis-

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<sup>\*</sup> *Hydrochærus capybara*.

<sup>†</sup> *Lutra Brasiliensis*.

tinction of the fishes : there are species that live on a muddy bottom, as in the varzea channels, and others that swim by rocky shores.

Insects depend on the plants that they feed upon, or the ground they live on ; so a vast proportion of the lowland forms are distinct from those of the terra firme ; and here, as among plants, we find many true “representative species,” allied to the highland ones. The insects that are found on both high and low land are either those that feed on more than one kind of plant, or wandering, predaceous species, that live in trees, and so can keep out of reach of the floods. Most of these bright-colored leaping spiders, that we see on the leaves, are wandering forms, and they are cosmopolites ; but the web-building species are peculiar to varzea or terra firme. The handsome green and red dragon-flies over the meadows are true varzea forms ; their larvæ live in water, and only in quiet pools, where the bottom is of mud ; on rapid highland streams we shall find other kinds. One pretty white moth we find in abundance on the grass ; its hairy caterpillars, instead of feeding on leaves, live in the water ; when the meadows are flooded, we can see them wriggling about among the stalks like eels.

There are three products of the lowland that have risen to commercial importance, and these three, at present, outrank all others on the Amazons. Rubber is the largest export of Pará ; next comes cacáo ; and though hides stand fourth among the exports, the grazing industry is really third in importance. It will be well, then, for us to review these three.

Twenty million pounds of rubber, valued at six million dollars, are annually exported from Pará. But the business is altogether a ruinous one for the province, as Brazilians



themselves are fully aware. The *seringueiro*, who gains two or three dollars from a single day's gathering, has enough, as life goes here, to keep him in idleness for a week ; and when his money is spent, he can draw again on his ever-ready bank. It is so with all the forest industries ; they encourage idleness, and draw workmen from agricultural employments, and retard civilization by keeping the Indian and half-breed population away from villages and schools, yet not from the worst side of white life. The traders have consciences as elastic as the rubber they buy. Generally they sell goods on credit, and when the poor, ignorant people come to pay in produce, they come to a tyrant, who will charge them twenty milreis where they owe ten ; who will force them to work for him, though he has no legal right to their services ; who will sell them inferior goods at high prices, and take their produce at low ones. In this way one can see how even the small merchants manage to live. For instance, one of them buys a coarse German wood-knife, which may cost him seventy-five cents. He sells this as an American article, for two dollars ; takes his pay in rubber at sixty-five cents the kilogram, and sells the latter for seventy-five cents the kilogram, with a sure market ; total profit, over two hundred per cent., and that when the trade is *honesto*. They tell of one trader who carried to the river Tapajós a box of playing cards, which he was unable to sell, because the Indians did not know their use ; so this Christian gentleman picked out all the face-cards, and sold them as saints, at fifty cents each. So the story goes, and the man does not deny it ; but, in justice to human nature, I prefer to doubt its entire truth.

The credit system is ruining the whole industry. The *mameluco* gatherer, who is in debt to the *patrão*, is only a

link of the chain. The small traders commonly get their goods on credit, from proprietors in the river towns, to whom they must sell all their rubber ; and these, in turn, are governed by trade-princes in Pará. It is not too much to say that the whole vast industry is under the control of ten or twelve men, who manipulate as they please, of course to their own advantage. The Pará merchant may gain ten per cent. by the rubber directly, but a great deal more, indirectly, by his sales to the traders.

The export duties are very heavy ; Brazil, having almost a monopoly of the trade, can tax it as she pleases. Rubber now pays twenty-three and one-half per cent. *ad valorem*, on leaving Pará ; and if it comes from the Upper Amazons, it must also pay thirteen per cent. on passing from one province to the other.

The half-wild *seringueiros* will go on, submitting to impositions and dying in the swamps, until Brazilians learn that, by purchasing this land from the government and planting it in rubber-trees, they can insure vastly larger profits, and do away with the evils of the present system. It is what must eventually be done. The rubber-gatherers, in their eagerness to secure large harvests, have already killed an immense number of trees about the Pará estuary ; they have been obliged to penetrate farther and farther into the forest, to the Tocantins, Madeira, Purús, Rio Negro ; and eventually even these regions must be exhausted, unless they are protected in some way. The trees, properly planted and cared for, will yield well in fifteen years, and, of course, the expense of gathering would be vastly reduced in a compact plantation ; half the labor of the rubber-collector consists in his long tramps through the swampy forest. At present, some of the swamps are owned, either nominally or really, by private in-

dividuals, but their claims are not very well established ; on the upper rivers, by far the greater portion are still government property. There is, however, a kind of preëmption of public land, by which any one can secure the sole *use* of a rubber-swamp, of any extent that he can manage, and for any period, but without having an absolute proprietorship ; if he deserts the ground, another man can take it up without hinderance. Land can be purchased outright, at rates varying from thirty cents to seventy-five cents per acre, but there are extra charges for surveying.

On the Madeira and Purús the business is conducted by large proprietors, who live, it is true, in princely style ; but it is a notorious fact that nearly all of them are deeply in debt, far beyond their power to pay. They preëempt a tract of ground, bring forty or fifty Indian gatherers from Bolivia, under contract to work for a certain period, get them into debt after a few months, and so establish a kind of feudal proprietorship, which is under the ultimate and absolute control of the grand seignior at Pará.

The present method of preparation from the milk is not very satisfactory ; the product is more or less impure from the smoke, and it must be cleaned in the manufactories. One Strauss, a German, invented an improved process of preparation, and sold his secret to the provincial government. The method consists simply in dropping the rubber milk into a solution of alum. I do not know what are the advantages or disadvantages of the Strauss system ; certainly it has never been carried out on a large scale, and the province never received any return for its outlay. There are other improved methods ; but the rubber-men are opposed to innovations, so the work goes on in the old rut. Very few Brazilians would have the patience to wait fifteen years for a

rubber crop, and it is very hard for them to see the profit of an expensive improvement.

They must submit to improvement, or the trade will slip out of their hands : there is a powerful rival in the field. Not long ago a large quantity of rubber-seeds were carried to England : planted there, in the public conservatories, a few of them produced healthy young plants, which were sent to India and transplanted along the lowlands of certain rivers ; and as India is already threatening Peru with the loss of her cinchona monopoly, so she may ere long rob Brazil of the rubber industry, unless immediate steps are taken to improve and protect it.

The cacáo industry is almost entirely confined to the lowland, as we have seen. In selecting his ground for an orchard, the planter must take care that it is not so low as to be subject to long floods ; in general, land where the great *urucury* palm grows may be used without fear. Such high borders are generally found only on one side of a channel—the concave shore ; hence, in passing along the river, we often see cacáo orchards on one hand, while on the other there may be low, swampy forest, or open meadow. The cutting for a plantation is done at the end of the rainy season, and the logs are left to dry in the sun for two or three months, until they can be burned. Beyond this the ground undergoes very little preparation ; the seeds are placed, several together, in shallow holes, arranged in rows at pretty regular intervals of about forty feet ; this work is done at the end of the rainy season succeeding the preparation of ground. The rest is a mere bagatelle. Our planter keeps his young orchard free from second growth, until the trees can protect the ground by their own shade, which will be in three or four years. By the fifth year they begin to bear pretty freely,

and their tops have formed a thick roof, perfectly impervious to the sun. In our wanderings about the lowland we often pass through these *cacaos*. They have a rich beauty of their own—the dense foliage, the twilight shade beneath, and the dark stems, four or five together, with the fruit growing, not among the leaves, but directly from the trunk and main branches, attached only by a short stem. The ground is quite clear, and free from underbrush, and in the summer, when the fruit is gathered, is for the most part dry. The harvest months are July and August, when the gatherers go every day to pick the ripe fruit from each tree and bring it in baskets to the house. There the oval, ribbed outer shell is cut open, and the seeds are washed from the white pulp; then they are spread over mats, and placed on raised stagings to dry in the sun, care being taken to turn them at intervals. Most of the seed is exported in this form; a little is roasted, pounded, and made into cakes with melted sugar, for the delicious chocolate of the country. Unfortunately, on the Amazons the sun is a very uncertain drying agent; frequently there are heavy showers, and the sky is clouded for days together; so it often happens that the imperfectly prepared seed gets musty and half rotten before it reaches the market. Much of the Pará cacáo, therefore, does not rate very high in the market. All this might be avoided by the introduction of a simple drying-machine, such as is used at Rio for coffee.

Stopping at the *fazendas*, we frequently get a refreshing drink, made from the white pulp which surrounds the cacáo-seeds. Enterprising planters prepare from this pulp a delicious amber jelly, which, if it were placed in the market, would be much more popular than guava-jelly. Even the shells are valuable; they are dried and burned, and from the

ash is prepared a very strong brown soap—a necessity to every Amazonian washerwoman.

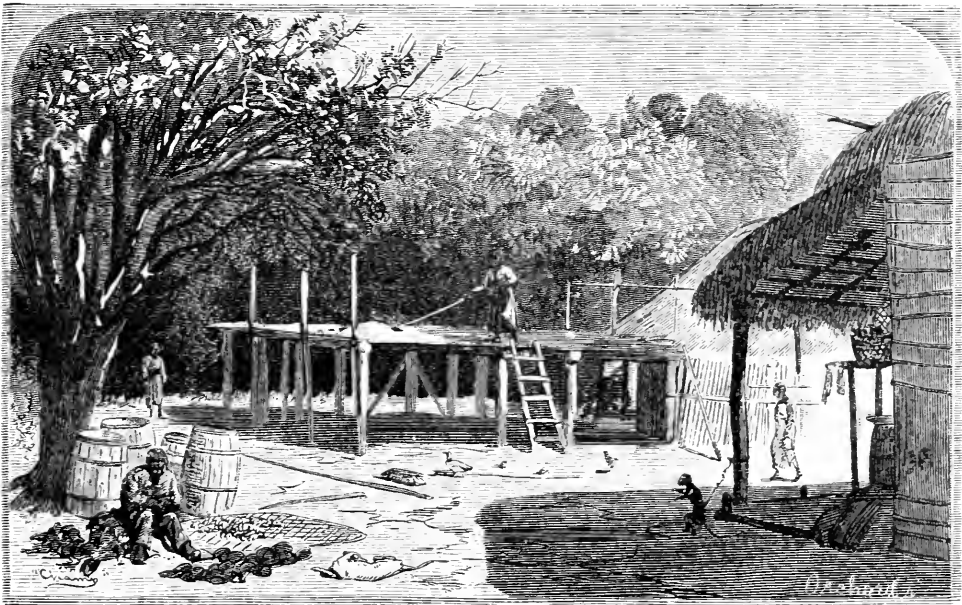
I confess that I am prejudiced in favor of cacáo ; I cannot understand why the industry has been so neglected. It is said that the orchards of Colombia and Venezuela are being abandoned, because they are unprofitable. Very likely the land there has become too valuable ; the great objection to cacáo-planting is, that it takes up so much ground ; but in the thinly-settled Amazons valley this is no obstacle. Land has hardly more than a nominal price : fine young orchards can be purchased at the rate of fifteen or twenty cents per tree, the ground going for nothing. And the great virtue of this industry is, that it requires only a few hands, and those during a season of the year when the ordinary forest occupations do not draw them away. In a country where labor is so scarce, such an advantage is almost incalculable. By combining this with some other branch of agriculture, as sugar or cotton planting, the farmers could avoid loss of time during the other months. The small lowland proprietors often have herds of cattle on the meadows near their orchards.

Cacáo-planting is considered one of the most profitable branches of agriculture on the Amazons ; it is calculated that each laborer can gather and prepare four hundred dollars' worth of the seed, and that during two months of the year. But latterly the plantations have been neglected ; many trees have been killed by long floods, and during some years the crops have failed almost entirely ; the rubber-trade has ruined this, as it has almost every productive industry.

At present about seven million pounds of cacáo are exported every year ; nearly all of this goes to France ; a little to England ; last year none at all was sent to the United States. The market value in Pará has steadily risen, from

seven and one-half cents per pound in 1874 to twelve and one-half cents by present quotations.\*

For my part, I cannot see why chocolate is not manufactured in connection with large orchards. At present, cacáo goes to France or England, and is there made into chocolate or "coco." Thence some of it is sent to the United States, reaching the American consumer after paying three or four duties, and the profits of a dozen merchants, besides those of the manufacturers. The product prepared from



Drying Cacáo

fresh seed, and packed in tin, would be much better in every respect than that which we get at home, and probably the export duty at Pará would be no more than for the seed.

As it is, we hardly know the taste of the drink, and we do not appreciate it at all. One who is accustomed to a generous bowl of *thick* chocolate every day can excuse the enthusiasm that called it *Theobroma*, "Nectar of the gods." This

is not a stimulant, like coffee and tea ; it is a mild, nourishing food, in a very condensed form. I have proved by my own experience that it may be used to advantage as a substitute for meat ; a friend, who has often made long explorations in the forest, told me that he always carried chocolate, as the most compact and useful food that he could find.

The grazing industry is gradually assuming very large proportions on the Middle Amazons, as it has heretofore on Marajó. It is true that the herds do not compare, and probably never will, with those of La Plata ; but there is an immense field for profit on these lowlands, if the present barbarous system can be superseded by a more civilized one. The cattle are a hardy, half-wild stock, well suited to the rough life they lead, but of small productive value. The only profit derived is from the meat and the hides ; owing to the oversupply, the meat is very cheap, retailing at from three to five cents per pound ; the hides are carelessly cured and often half spoiled. As for the milk, no value at all is set on that ; the herdsmen drink it sometimes, but the town-people hardly use it even in their coffee, and butter and cheese manufactures are unknown. It is true that the cows give very little, a quart or two at the utmost, and that only when they are running on the lowland pastures ; but with improved breeds and careful management I see no reason why the yield should not be equal to that of our northern herds. Excellent butter is made now by American residents ; this and cheese ought to be manufactured in large quantities. The great difficulty in the way of successful grazing is, that the lowland meadows must be abandoned during the floods ; then the cattle are driven away to the scanty pastures of the highland campos—sandy tracts, with scattered trees and short wiry grass. Even these



are of limited extent ; numbers of small herds are confined to little islands of the raised border, and reduced to rations of the long *canna-rana* grass, which the herdsmen cut for them over the submerged land ; but they hardly ever get enough of this for their wants, and the poor beasts may be seen wading up to their necks to catch the floating leaves. Hundreds die of disease and famine ; when the rise of water is rapid, whole herds are drowned.

Some system of winter-feeding ought to be devised. For instance, near large sugar-plantations, where cane is ground in the wet season, the tops might be utilized in this way ; or the richly nutritive *canna-rana* grass of the floating islands could be collected in steamboats, and sold to the herdsmen at a small price. As for hay, it probably could not be preserved in this humid climate ; but various succulent roots grow almost spontaneously, and every northern herdsman knows their value for milch-cows. It might even be profitable to plant pastures on the high land.

I wish some enterprising American grazer would turn his attention to these plains. He would have to introduce new breeds with caution ; probably it would be well to cross them with the hardy native stock. There would be other difficulties, no doubt, but I am sure that they would disappear before American pluck and ingenuity. Surely, with canned butter selling at seventy-five cents a pound, and land worth hardly so much per acre, there are vast possibilities for profit here. For making butter on a large scale it might be necessary to import or prepare ice. Even as now carried on, the industry is very lucrative.\* Some of the large proprietors own from ten to thirty thousand head of cattle, valued at eight or ten

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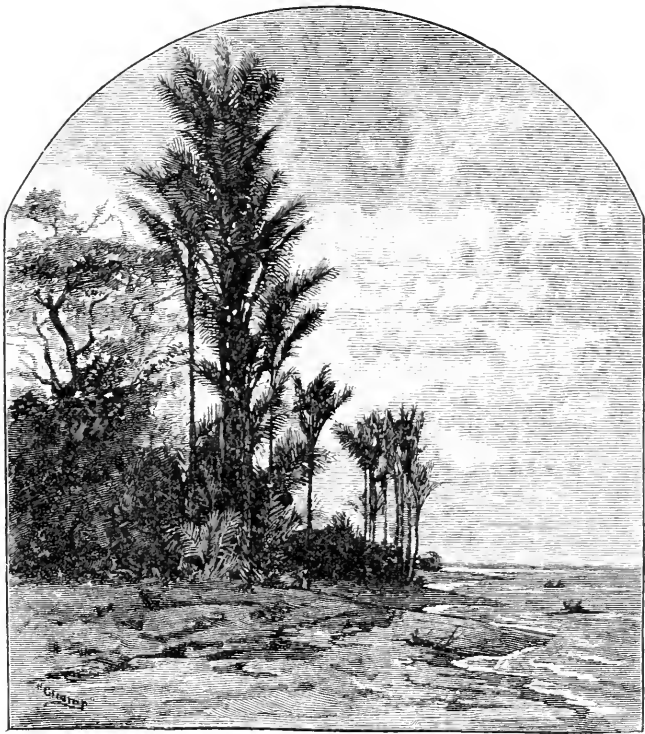
\* Leather-tanning and shoe-making would be very profitable. Excellent tan-bark is obtained from various highland trees.

dollars per head. They employ hundreds of herdsmen—hardy fellows, in the saddle from morning till night, hunting up strays, keeping the herds in rich pasture, and branding them every year. We often see these *vaguciros* galloping over the campos on their wiry little gray horses, each with a bright red blanket rolled behind the rough wooden saddle, and a lasso-cord hanging in front; their bare great-toes thrust into tiny stirrups, and their hair streaming in the wind.

## CHAPTER IV.

### SANTAREM.

**I**T is bright morning when we pass from the yellow Amazons to the black waters of the Tapajós. There are white sand-beaches here, and clumps of graceful javary palms ; to the south stretches a row of picturesque hills, flat-topped, most of them, and covered with forest. A pretty picture it is, with the framework of cloudless sky and dark, clear water. The air is fresh and cool as on a summer morning at home ; we long to ramble in the shore woods and



The Beach below Santarem.

away to the hills. What may there not be there? The mighty current of the main river has driven the tributary close to the southern shore, where it forms only a narrow band.

Santarem lies just above, two or three miles within the mouth of the Tapajós. There are rows of neatly white-washed houses, one and two stories high; the handsome municipal building stands by itself, below the main town, and at the other end the palm-thatched huts of the *Aldeia* are clustered about the shore. Nearly every Amazonian town is divided into *cidade* and *aldeia*, city and village; the former is the modern town; the latter the original Indian settlement from which it sprang. There is a little rocky hill by the shore, with the remains of a stone fort on it, but the walls are all overgrown with bushes, and not a gun is visible. Rows of canoes are drawn up along the shore, and a score of larger vessels are lying in the river; the sand-beach is lively with washerwomen of all shades, with occasionally a well-dressed promener, picking his way among the drying clothes. The church is large and showy, with two square towers, looking over a great grassy square, where is set the universal black cross. You might go far before finding another Brazilian city so clean and neat-looking as this one. With the mango-trees of Pará, it would be as pretty as it is clean; but here the streets are shadeless, and only the half-wild gardens give a touch of color to the glowing white.

The steamboat anchors in front of the town, and presently a number of barges are pushed out for freight. A passing canoeman comes to our call, and bickers for some minutes before he will set us ashore. Arrived there, we seek the house of Sr. Caetano Correa, to whom we bear letters of introduction. Sr. Caetano is a well-to-do merchant of the place; we find him sitting in front of his store, cool in linen coat and slippers. He bids us welcome very cordially, and invites us to remain with him until we find other quarters.

These preliminaries arranged, coffee is brought out, and we converse pleasantly until breakfast time.

Our host is a gentleman of the old Brazilian school ; when he places his house "at our orders" we may be sure that we are welcome. The breakfast is as unceremonious as possible, but curiously different from a meal at home. There are no ladies at the table ; only a few families in Santarem have adopted the new customs in this respect, and Sr. Caetano's is not one of them. Two or three barefooted negro servants stand behind our chairs, with very little to do. Sr. Caetano serves the meat, and then invites us to "help ourselves : *Não ha cerimonia.*" Beyond that, there is no passing of plates, and no waiting between the courses. After a desert of fruits and wines, the inevitable toothpicks are passed around ; we light cigarettes, and sit smoking for ten minutes before leaving the table. This is very much what we shall find at all the better houses ; no especial preparation is made for transient guests, and we are welcome at the table of any acquaintance, at a half minute's notice.

Sr. Caetano's store is one of some twenty in the town ; most of them are small affairs ; three or four only are large and well stocked, like this one. Several Pará merchants have houses here. Much of the prosperity of Santarem depends on the Tapajós and the country along its banks. Some of the houses have branch establishments at Itaituba, one hundred and fifty miles up, and trading canoes are annually sent to the region beyond the falls. Much rubber comes back in these canoes ; drugs and cacáo also, and now and then a feather dress from the Mundurucú Indians, or hideous embalmed heads. Once, during our stay, Sr. Caetano receives a little box of gold dust from Cuiabá, far in the interior of Brazil : it has come all this distance by canoe, down the Tapajós.

There is a curious mixture of quiet and bustle about the town. The stores are all neatly whitewashed or yellow-washed; they have high green doors, occupying all the front, and here the proprietor sits, unless he is waiting on a customer. The wares are miscellaneous: light-flowered calicoes, thread, pocket-knives, large wood-knives, household utensils, and so on. In every case a part of the counter is reserved for rum and cheap wines, and tobacco; here the Indian and mulatto customers are served: "tobacco for two *vintens*," or "rum for one *tostão*,"\* the universal standards. Much of the business is of this small grade; only when customers come in from the country, there is a general overhauling of goods and selection of dresses, tools, or groceries, enough to last until the next voyage.

The shopkeepers are sociable and gossipy: all the town news is passed over the counter long before it reaches the little weekly paper. The stores, of course, are common lounging-places; there is always a chair at your disposal, and, in the morning, a cup of coffee with the proprietor; if you do not care to stop, he nods and waves his hand. The better class of men, like Sr. Caetano, are honest and reliable; many of the small shopkeepers, no doubt, will cheat when they can, often taking advantage of ignorant customers, as our country storekeepers do at home.

During the hot hours, from two till four, many of the stores are closed; the master takes his siesta, and though your business be never so urgent, no one will venture to awaken him. Beware how you break in upon this afternoon nap of a Brazilian; if you do so, you will be set down as ill-bred, and decidedly a bore. Rather, avoid attempting busi-

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\* A *vintem* (plural, *vintens*,) is twenty *reis*, about one cent. The *tostão* is five *vintens*.

ness and calls at this hour ; they are as much out of place as a New York visit would be at seven o'clock in the morning.

Dinner is at four, always precisely like breakfast in the courses, and followed by coffee or tea. We stroll out at sundown, and make acquaintances readily ; people are sitting before their doors, as we have seen them in Pará, only here there are no ladies in the groups. They smoke, play at draughts, oftenest of all talk politics ; and you find, after a little, that members of the same party fall together. Sr. A., liberal, does not fraternize with Sr. B., conservative, though the two may be outwardly polite in their greetings. We, who have no politics, are welcome anywhere ; there are many intelligent and educated men here, and traders who have spent half their lives on unheard-of rivers, among semi-savage Indian tribes ; from them we can pick up great stores of information that will be valuable to us in the future. I like this Brazilian custom of out-door evening chats ; there is a freedom about it that encourages interchange of ideas and opinions. We sit in the cool twilight, while the evening breeze just stirs the water in front ; there are fishing lights on the other side, and one down the beach, where some Indian family has camped for the night ; the very spirit of peace rests over the landscape ; you think you could remain all your life among these good people, away from the striving world, remembering only the quiet and beauty about you.

The hour for ceremonious, black-coat calls is in the morning, shortly after breakfast. The *Senhor* welcomes us politely at the door ; conducts us to one end of the room, where a settee is placed against the wall, and chairs are set in front of it, so as to form an exact square. Here we talk common-places and pass compliments, and, altogether, are quite as unnatural as we would be under like circumstances at home ;

on leaving, we are politely bowed to the door, and we go away wondering if this is the pleasant, sociable gentleman with whom we were chatting the evening before. Something of this same ceremony is found in other social observances. For instance, if we leave the town, even for a month, we are expected to make calls on all our acquaintances, *para despedir*: "for good-by." If His Excellency the Baron, or any other distinguished man, goes away, he gives a little dinner or lunch to his friends, and they all accompany him to the steamboat, embracing him, French fashion, at parting. But, beyond these small matters, society is remarkably free from stiffness.

One day we receive printed invitations to an evening party—a dancing party, of course, and the *élite* will be there. We find the large house full of guests, ladies and gentlemen handsomely dressed in the French fashion, the description of which is quite beyond our zoölogical pen. The musicians—very good ones in their way—are seated around a table in the hall; they play simple tunes; once we are astonished to hear a quadrille led off with "Pop Goes the Weasel," hardly a note changed. For the rest, a party here is much what it is at the North. Brazilians are graceful dancers, but the ladies, between the sets, are anything but entertaining; custom, or bashfulness, keeps them together at one end of the room, while the gentlemen may be strolling down the street to the little beer-shop, which is always open on such occasions. These parties are almost the only occasions on which ladies are permitted to mingle in social life. There are, indeed, exceptions with one or two of the better families, in which ladies come to the table with their husbands and brothers, and converse freely with guests; and you will often see some young fellow stop at a window for a moment, to talk with



some fair acquaintance. But, as a rule, the old Portuguese custom of seclusion is still dominant in all the Amazonian country towns; the people think, and say, that women are unfit for freedom; wiser men mourn the want of education for their daughters; they urge, with much seeming truth, that the sex must be fitted for liberty before it is freed. Beyond this restraint, I believe that women are universally well treated; but they must lead a dull life, shut out from the world in their dark rooms; they look yellow and unhealthy. If a young man is paying his addresses to a lady, he visits her at stated intervals, always in the presence of her mother or some female relative.

In course of time he carries her through a dressy wedding at the church; there is a great party in honor of the event, and thereafter she is more shut up from the world than ever.

Christenings are celebrated with almost as much rejoicing as weddings, but there is less ceremony about them. Our friend, Dr. A., has a little daughter who is to be christened during our stay, and we are honored with an invitation to the breakfast, and the subsequent ceremony at the church. Some fifteen or twenty family friends make up the party; we



At the Window.

chat for an hour pleasantly, ladies and gentlemen together, for this is one of the upper class, modernized families. At the breakfast there is a great display of silver service and choice cookery, the like of which you will not often see at a northern dinner-party; the health of the little Catholic-elect is proposed in a neat speech, and the father responds; then His Reverence the Padre is toasted, and his Excellency the Baron, and healths are drunk between friends across the table; there is no excess, but much harmless merriment. After breakfast the children are brought in and duly admired; we chat for an hour longer, or remain if we please until the christening at four o'clock; the baby is received into the Church with the complicated Catholic ceremonies; and in the evening the house is thrown open to all friends. Throughout, the day's pleasure is marked by well-bred good-humor and an utter lack of restraint which is very charming.

Holy Week brings its round of ceremonies, culminating on Good Friday, when there is a grand procession of the Body of Christ. It passes through the town in the early evening; the approach is heralded by the noise of hideous wooden rattles in the street; torches flare over red coats and gilded canopies. There are no rockets on this occasion, for it is a time of sadness and lamentation. The cross-bearer walks before, with a heavy black cross; then a troop of red-coated boys pass, two by two; then child-angels, with spangled gauze dresses and pasteboard wings, some bearing little ladders, or hammers, or pincers, the instruments of torture used at the Crucifixion. A lady follows, dressed all in white; she sings, at the street-corners, hymns of mourning for the dying Lord. Now people kneel in the street as the dead Christ passes by—a coffin, with a wax or plaster image, not larger than an infant; it is borne under a canopy, as is

the life-size figure of the Virgin which follows. These have met in the church, with groans and weeping; a sermon has been given to the kneeling congregation and emphasized by the sudden unrolling of cloths, whereon are portrayed the sufferings of Christ. The susceptible people are strangely moved; negroes and mulattoes weep and tremble; men of the better class stand about by the pillars and listen reverently. Even more impressive is the Easter Sunday ceremonial, when light bursts suddenly on the darkened church, and the organ peals forth grandly, and the priest and people mingle voices in songs of rejoicing for the Risen Lord. Now there are rockets in abundance, whizzing and crackling around the building; bells are sounded, and all the city knows that darkness is ended and light has come.

At one side of the church we notice a gilded image of Christ on the cross, with a tablet, on which is an inscription in gilt letters. Translated, it reads thus:

“The Knight, Charles Fred. Phil. Von Martius, Member of the Royal Academy of Sciences of Munich, making, in 1817–1820, by order of Maximilian Joseph, King of Bavaria, a Scientific Voyage to Brazil, was on the 1st of Sept., 1819, saved by Divine Pity from the Fury of the Amazonian Waves, near the Village of Santarem. As a Monument of his Pious Gratitude to the All Powerful, he ordered this Crucifix to be erected in this Church of Nossa Senhora da Conceição, in the Year 1846.”

It is said that Martius, who was overtaken by a dangerous storm, made a vow to erect the cross if he were saved. The Christ is a life-size figure of iron, gilded, and was sent from Europe with the tablet; the cross is of native *itauba* wood.

It is a strange congregation that this priest has to teach: susceptible negroes, carried away by the gaudy ceremonies,

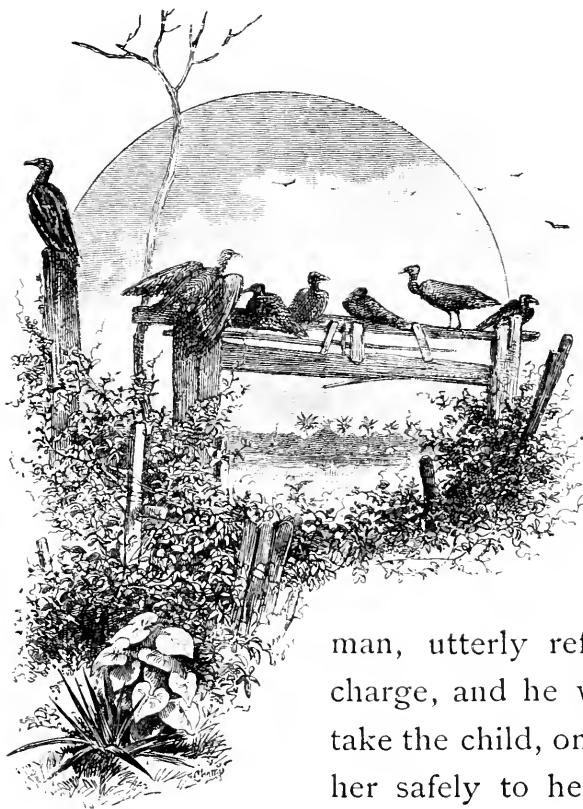
and whites who care very little about them, and Indians who look on with stolid indifference; devout old women, counting their beads on the stone floor, and pretty ones, taken up with their finery; hot-headed youngsters, who upset half the commandments every week, and merchants absorbed in their gains, and old men tottering on with childish vanity. Well, the priest is a good one, and so far the people have an example that is worth much more than the precepts and ceremonial. I believe that this vicar has been steadily working improvement in the town, ever since he came. We find him here and there, in rich houses and poor ones, encouraging right and gently chiding wrong—above all, leading a pure life, beyond reproach. He is learned: has studied in Lisbon and Paris, and so well that very little bigotry is left. He will meet us Protestants on equal terms, without lowering a whit his honest Catholicism. It is a pity there are so few like him; but in nearly all the villages around, the churches are in charge of weak men, or utterly corrupt ones; the predecessor of this Santarem priest was deposed for some flagrant sin.

The Brazilian Sunday is a holiday, much as it is in France; here at Santarem, as elsewhere, the stores are all open during the morning, and Sunday evening is the regular time for shows and displays of all sorts. Only in the afternoon the streets are very quiet, and the beach is deserted. We stroll down, past the old stone fort, to the municipal building; part of this is occupied for a jail, where some fifteen or twenty prisoners are gathered; all the men in one room, without employment, except what they choose to take up themselves, and with very little restraint, inside of the barred windows. They come to the grating to offer baskets and trinkets for sale; one has rings, made from tucumá nuts,

and another is weaving sieves of strips from the leaf-stems of caraná palms. Of the prisoners here, two or three are murderers, condemned to imprisonment for twenty years or for life ; capital punishment is admitted by law, but practically it is almost a dead letter now. The criminal and civil courts are held in another part of the building ; in smaller matters the tradesmen very often conduct their own cases, for nearly all of the better class are good rhetoricians and ready debaters. There are, however, a number of smart lawyers in the town, and they generally have plenty to do.

A place of this size and importance has a whole corps of civil officers. The *Delegado de Policia* answers very nearly to our justice of the peace ; he has charge, also, of the police force, and reports to the Chief of Police at Pará ; two or three sub-delegados act as sheriffs or constables. The *Juiz Municipal* presides over what would be called a Common Pleas court in the United States ; the highest judicial officer in town is the *Juiz de Direito*. There is an orphans' court, or probate court, with a *Juiz dos Orphãos*, who has the control of all minors whose parents or guardians have died. The laws are good, but they are often spoiled in the administration, either through legal quibble or, sometimes, actual fraud. Frequently the petty spite and over-officiousness of the judges are a source of great annoyance, especially to foreigners. If an American dies here, and leaves no family, the *Delegado de Policia* takes charge of all his effects, although a known friend be travelling with him ; application for them must be made through the American consul — a very tedious process, though it is entirely just in theory. Another case which came under my notice was quite as unpleasant. An American died at Santarem, leaving a little girl, who was cared for by other Americans for more than a year. The father, on

his dying bed, had begged them to send the child to her friends in the United States ; but he left no property, and it was a long time before his wish could be complied with. As it happened, an American government steamer was engaged in surveying the river, and the captain, out of pure charity, offered to take the child home, free of cost. Everybody in town knew of the matter, and many praised the captain for



Scavengers.

his kindness ; no impediment whatever was placed in his way until he reached Pará, when the American consul was summoned to give up “ a minor who had been unlawfully taken from the jurisdiction of the Orphans’ Court at Santarem.” The captain, being a gentle-

man, utterly refused to abandon his charge, and he was finally allowed to take the child, on his promise to deliver her safely to her relative. No doubt this was very good law ; if the *Juíz dos*

*Orphãos* was not aware of the girl’s departure, he had a legal right to make requisition for her through the authorities at Pará, and in some cases, probably, this right would prevent injury to the minor. The Americans, through ignorance, had neglected to take the proper steps in the outset ; but the judge knew all the parties personally, and he should have had the discretion to let matters alone. It is bad enough

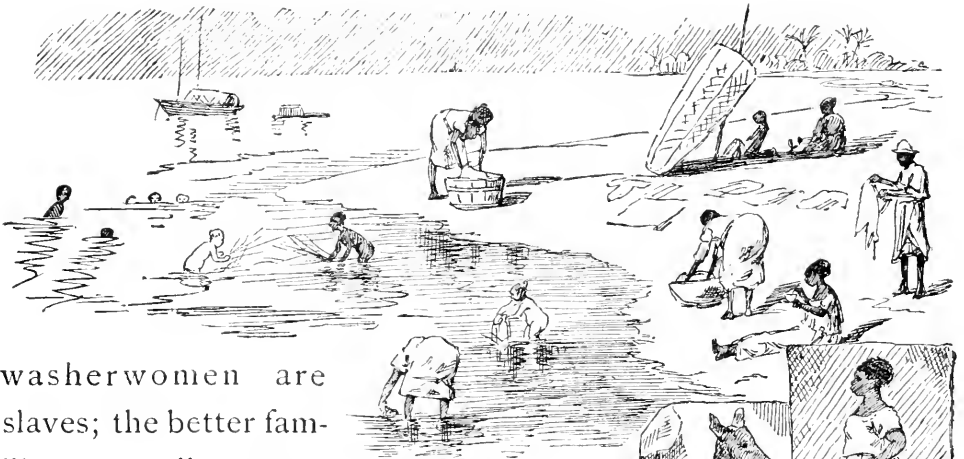
to see a grown man drawn into this Brazilian legal machine ; but it is outrage with a little tender child.\*

If Santarem gives much employment to the legal gentlemen, the medical profession is hardly represented. There are two little apothecary shops, and one or two physicians, for the entire town of three thousand inhabitants. Intermittent fevers are never felt here ; severe colds are sometimes prevalent during the wet season, and, when the river is lowest, the water is decidedly unwholesome ; as there are no wells, this is the only supply for drinking. Otherwise the place is a marvel of healthfulness ; for a wonder, there are no mosquitoes, and we can sleep in peace with our windows open.

The beach is a study ; from morning till night it is thronged with picturesque groups, of all colors and conditions. First, at sunrise, come the women, trooping down with water-jars on their heads to fill for the day's supply ; they chatter and gesticulate, and march back at length, walking stiffly under their heavy burdens. Then the bathers appear, one by one, and pass below the town to their own part of the beach : the clerks with towels on their arms ; the great men followed by little negro boys, with a chair, and a board for the feet, and sponge, soap, slippers, what not. We, with the rest, are tumbling about in the water by this time ; in all Amazonia you will hardly find such another river for bathing. As we go back to our coffee we see the washerwomen bringing down their baskets ; they tuck up their skirts neatly as they wade in ; clothes are beaten by slapping the water with them, and the women pile them on their heads until they come ashore again. By noon the sands are covered with drying linen, and the lines are flying all colors. Many of these

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\* This case of little Allie Stroop attracted much attention at Pará. It is well that the child escaped so easily.



washerwomen are slaves; the better families generally own a few negroes, as the only servants they can get, except the very unreliable Indian ones. Sometimes Indian children are "adopted," and brought up as servants, but these wards are almost sure to leave their guardians as soon as they are of age; often they run away long before that time. The slaves, it must be said, are very well treated, and they are often attached to their masters.

Strange river-craft are coming and going before the city; cattle-barges, and trading canoes, and fishing vessels, with not a few pretty pleasure-boats. Every day or two a steamboat anchors in the port, and rarely a schooner, or even an ocean steamer, comes up from the sea. Some time, no doubt, Santarem will have



Beach Scenes at Santarem.



a large commerce direct with Europe and the United States. In the dry season, the trade-winds blow steadily up the river during a great part of every day ; a schooner can ascend against the current, even to Manaos.

Most of the smaller canoes belong to fishermen from the *Aldeia*, the old Indian village, which is left now as a suburb of the modern city. The streets in the main town are straight and sandy and glaring, but these thatched huts of the *Aldeia* are thrown helter-skelter, with winding paths among the bushes, and always a possible house beyond the last one that you see. We find a few whites, but more Indians and mulattoes ; the most of them have houses and plantations in the country, but they spend their Sundays here, and holidays and Holy-week, of course. I always come to the *Aldeia* when I want to engage canoemen, or guides ; a sociable chat, or a cigarette from my pouch, will often secure me a ready workman, such as I could never find about the main city.

I suppose that the *Aldeia* has hardly changed since the Jesuit missionaries gathered the Tapajós Indians to this spot. There is an old tradition to the effect that these Tapajoses, or *Tapayós*,\* were descendants of a tribe which had emigrated from Peru or Venezuela and settled on this river. Be that as it may, it is certain that they formed one of the most powerful tribes in the whole valley ; "sixty thousand bows," wrote Heriarte, "can be sent forth by these villages alone, and because the number of Tapajós Indians is so great, they are feared by the other Indians and nations, and thus they have

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\* *Tapayó*, singular ; *Tapayós*, plural. In this, as in many other names of Indian tribes, the Portuguese has formed a double plural, *Tapayoses*, or *Tapajoses*, or again, *Tapajozes*. Another instance is seen in the tribal name *Tupinambá*, from which the Portuguese formed, first *Tupinambás*, and then *Tupinambazes*.

made themselves sovereigns of this district.”\* Pedro Texeira came in 1626 to buy slaves of this powerful tribe; later, Bento Maciel and his crew enslaved the Tapajoses themselves, and the helpless savages fled to the forest before their civilized persecutors, so that whole villages were depopulated. The Indians must have been ill enough prepared to receive missionaries; but in 1661 came Padre João Felipe Bittendorf, sent hither by the Superior, Antonio Vieira, “because he had gifts and talents worthy to conquer and reduce the barbarians.” The king, also, ordered that “a village should be established at the mouth of this river, and in it a college of the Company of Jesus, which should be as a seminary, wherein might be prepared the workers of the faith which was to be spread and planted in all the regions of the Amazons.”† Whether the seminary was ever achieved, I know not. Priest Bittendorf induced some of the Tapajós Indians to acknowledge his control, and these he gathered on the banks of the river, with others from the neighboring Uruerucús tribe; this mission was protected by Jesuit authority, and it thrived apace. Bittendorf and his first successors lived in poverty, and said masses in thatched sheds until 1682, when a little tile-covered church was erected. About this time, also, the fort was built. There were rumors of French invasion from Guiana, and the king ordered that the Amazons should be fortified. One Francisco da Motta Falcão offered to build this, and three other forts, at his own cost, on condition that he should have command of one of them. He died before the work was completed, but his son carried out his wishes and was placed in command of the fortress, “with the annual salary of eighty dollars.” The office remained in this family for a long time.

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\* *Descripçam do Maranhão, Pará, etc.*, p. 35.

† Moraes: *História da Companhia de Jesus*.

The mission village grew: in 1738 a part of it was removed to Alter do Chão, "because of the great size of the Tapajós mission, the land not being sufficient for plantations." In 1750 the population was about four hundred, mostly Indians, but Portuguese traders began to come in, and plantations of cacáo and coffee were started here and there. Up to this time the place was simply a mission settlement, "Aldeia dos Tapajós;" but in 1754 the Captain-General, Mendonça Furtado, made it a village, and gave it its present title of Santarem; the Jesuit missionaries were driven out, and regularly established priests took their place; and gradually was built up the little city that we have seen. It had to pass through two heavy storms. In 1773 the Tapajós region was overrun by the warrior Mundurucús Indians; every village was sacked or reduced, and at length the *turê* was sounded before Santarem itself. Citizens and soldiers gathered in the fort and met their assailants with a hot fire of musketry; the Mundurucús fought hard, the women bearing their husbands' arrows, and urging them on with their shouts; but in the end they were driven away. Soon after they swore peace with the whites, and have ever since been their best friends. Santarem, at this day, would be exposed to attacks of the wild Indians, were it not for the faithful Mundurucús guards in their villages on the Tapajós. They never wavered, even in the second great storm—the time of the *Cabanaes*, in 1835. Santarem itself submitted to the rebels, but the Indians joined with loyal whites to drive them out. Through the city you will hear only good words of the Mundurucús, and if a tattooed chief visits the place, he is received with all hospitality, as befits his position.

Since 1848 Santarem has been classed as a city; it is the head of a *comarca*, or county, comprehending all the Tapa-

jós region and the country from Alenquer and Monte Alegre northward to the Guiana mountains.\* Of course, the greater part of this region is still unbroken wilderness. But the situation of the place is superb; if the Amazons valley is ever peopled, this must be one of its most important cities. The little fort, it is true, can never guard Amazonian commerce, for the main channel of the great river is five miles away, and there are others beyond. So one is much inclined to laugh at the military wisdom that spent ten thousand dollars in rebuilding the structure, "to keep hostile vessels from ascending the river." But the commercial advantages of the place are almost unequalled in the river-valley. It is in the midst of a fertile country, and at the mouth of a great river, the highway to Matto Grosso; it is a convenient port for all Amazonian vessels; the climate is delightful, and insect pests are almost unknown. This little mission village of 1661 will yet be a great city—one of the emporiums of the Amazons. Other places around have gone to decay; the rubber trade has drawn away their population, and none come to build it up. But Santarem has grown steadily; even now it is recognized as the most important interior city of the province. Be sure it is in its nonage yet; neither you nor I will see it full grown.

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\* There are two electoral districts—Santarem and Monte Alegre—and five towns (*municípios*), viz.: Santarem, Monte Alegre, Alenquer, Villa Franca, and Itaituba.

## CHAPTER V.

### AMERICAN FARMERS ON THE AMAZONS.

**I**F ten American travellers were asked to give their views of Brazil, we would hear ten different opinions, grading all the way from paradise to despair. And I suppose that Brazilians, travelling in the United States, get just as diverse impressions of the country and its people.

When anybody asks me if Brazil is a good field for the American mechanic, farmer, merchant, I can only answer: That depends entirely upon the man. The country is what it is; but you or I describe it as what it is not, because we see it only from our particular angle of vision; we judge of it as it has treated us well or ill. The question resolves itself into this: What are the advantages and disadvantages of life in Brazil? What men should come here, if they please, and what men should stay at home in any case? In answer, we can only seek to know the experience of old American residents; their success or want of success, and the reasons therefor. We can have no better field for these inquiries than the Lower Amazons.

There is a great creaking of wheels and a confusion of driver-shouting. Down the Santarem street come four brown horses, dragging an immense American wagon; a tall, coatless individual sits astride of one of the leaders,

and guides the cavalcade with much flourish and noise. He draws up in front of Sr. Caetano's store, and salutes the merchant ; then alights and marches straight up to us, remarking : " Wal ! Who are you ? "

Of course we get acquainted at once, and Mr. Platt\* is a man worth knowing, too. He is one of some fifty Americans who are established in the forest near by ; Platt himself is a Tennessean ; the others are from Mississippi, Alabama, and so on. In its origin the colony was much larger. Over two hundred persons came here from Mobile, in 1866, under the guidance of a certain Major Hastings. This was shortly after the great civil war, when the subject of Brazilian emigration was much agitated in our Southern States. People who had lost everything were willing enough to begin again on new soil ; the Brazilian government encouraged them to come, and agents were paid so much per head for their importation. Naturally, these agents drew a very glowing picture of Brazil, and said nothing at all about the difficulties that emigrants would have to meet. None of the colonies were very successful ; this one of Santarem was badly made up in the outset ; with a few good families there came a rabble of lazy vagabonds, offscourings of the army and vagrants of Mobile, who looked upon the affair as a grand adventure. Arrived at Santarem, they were received kindly enough, but after a little the good people became disgusted with their guests, who quarrelled incessantly and filled the town with drunken uproar. Government aid for the colony was withdrawn ; gradually the scum floated away, leaving the memory of their worthlessness to injure the others. The few families that remained had to outlive public opinion, and a

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\* In general, for obvious reasons, I have used fictitious names in this chapter.

hard time they had of it, with poverty on one side and ill-will on the other. But in time the Brazilians discovered that these were not vagabonds; they learned to respect their industry and perseverance; and now, all through the Amazons, you will hear nothing but good words of the Santarem colony.

Farmer Platt presses us to "come out for a few days." So, when the wagon moves off presently, we are seated in the bottom of it, among sundry bales of dried fish and baskets of mandioca-meal—the week's provisions. The farmer cracks his whip sharply; the sun is low already, and the wheels must wade through eight miles of sand to-night. Bare-legged boys come out to stare; the wagon has not ceased to be a wonder, and truly it is a noteworthy spectacle, with the four horses and our tall farmer. The wagon, Mr. Platt informs us, was sent from his old home in Tennessee, and it had to pass through many vicissitudes of custom-house and travel before it reached this place. Long ago, a law was passed by which agricultural implements could be introduced, free of duty; but practically, this law is a dead letter in almost every case, and even if it is allowed, the importer must be put to a vast amount of trouble. Mr. Platt's wagon paid quite as much for duty as it cost in the outset; everybody knows that this extortion was illegal, that the duty was excessive in any case; but poor Platt has no redress, except by a litigation which he cannot afford. So he submits, and grumbles, as a thousand other good men are grumbling. And Brazil wonders why immigrants do not come.

By the time we have toiled up one long slope and down another, darkness begins to fall. The land, thus far, is sandy *campo*; trees are scattered over the surface, not close enough for shade nor thickly leaved enough to be called luxuriant;

they are low and gnarled; bushes and grass cluster about the roots, but there is no continuous undergrowth. The road is merely a track, winding among the tree-clumps until it enters the forest, five miles from Santarem.

It is too dark now to see how great the change is; only the trees rise high on either side, and the branches almost meet against the gray sky above. Platt's shouts to his horses have a different sound, among the echoes; he stoops now and then, to avoid a branch. Here and there great vine-stems hang down from the darkness above; in making the road they have been cut away near the ground, but the ends are still low enough to give the driver an occasional rap; he swings them right and left into the bushes, with a great crash; we in the wagon must look out for our hats. The darkness grows deeper, until the tree-trunks are lost in gloom and our driver is hardly visible. The forest seems to be higher; we can just see a few glinting stars overhead, where the gaps are widest. Tree-frogs and crickets are chirping all around; a night-bird wails from the branches; once or twice we catch glimpses of moths or bats flitting above us.

Presently we stop with a jerk: one of the wheels is caught in a big liana. Francisco, Mr. Platt's man, gets out of the wagon and cuts away the obstruction with a wood-knife. Then we go on, now running against a tree, now sinking deep into a rut, getting through somehow with horse-muscle and man-muscle. We pass a clearing and a little thatched house, hardly visible in the darkness. Mr. Platt and Francisco are discussing the owner of this house, an Indian, who is a noted hunter in these parts. Half a dozen jaguar skins he has, and more he has sold; there are scores of the animals on the hill beyond his house. Only a week ago he shot a



very large one, but not until he had lost his best dog by a blow from the creature's paw. Francisco goes on to tell other hunting stories, and adventures of his own in the woods; the conversation takes a wonderful interest, with the darkness around and the moaning of the wind above.

By and by we alight to stretch our legs, walking beyond the slow-going wagon; we feel our way rather than see it, so dark the road is. There are white ant-hills along the sides—pale glows of phosphorescent light, like coals in the ashes.\* They look ghostly in the darkness, and we think of the jaguar stories with a little tremor. But presently comes the cheery shout behind, and the creaking of the wheels; and beyond there is a great clearing and a house, whence the dogs are pealing a noisy welcome to our party.

The farmer's wife welcomes us cordially; the children are shy, for they do not often see strangers. Greetings over, we swing our hammocks under the thatch; the air is cool and pleasant—a little cold towards morning, so that we have need of our thick blankets.

But what a glorious sight we have with the morning sun! All around there are splendid masses of green: cacáo-trees, and lime-trees, and great pale banana-plants, and coffee-bushes straying up into the woods; beyond those, a bit of untouched forest, with a giant Brazil-nut tree towering over it, two hundred feet at least, and with never a branch for a hundred and twenty feet from the ground. Back of the house there is a steep hillside—a mass of rolling forest to the top. This is the edge of a table-land which extends over all the country to the south, and rises in bluffs along the Tapajós and below Santarem. The American families have located

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\* The phosphorescence is in the hills themselves, not, so far as I know, in the insects; and I believe that it is peculiar to the mounds of one or two forest species.

themselves along the base of this table-land, at half a dozen different points. The streams give them water, and their plantations of sugar-cane are on the rich black land along the edge of the plateau. This plateau, by way of distinction, is called the *montanha*, but there is nothing mountainous in its character; it is simply a low table-land, about five hundred feet above the river—a spur, probably, of the higher region in Central Brazil. There are outlying hills on the campo, and the highland forest has extended over the lower ground, two or three miles. With all the beauty of the site, Platt evidently has a hard time of it; he looks careworn, and a little discouraged. The land is excellent, but the stream is too small to give him a good water-power, and without that he cannot manage a large cane-plantation. He complains of the low prices that he receives for his produce; the Santarem traders take advantage of his helplessness, and he is often obliged to sell below the market value.

All the Americans are cultivating sugar-cane; the juice is distilled into rum, which is sold at Santarem. Probably coffee or cacáo might pay better, but our colonists came here without money, and they could not wait for slow-growing crops. Mr. Platt tells how he and his family were housed, with the others, in a great thatched building; how the colonists were supported for a while on government rations, until they could locate their plantations and get in their first crops; how they had to struggle with utter poverty, work without tools, live as best they could until their fields were established. Platt saved a little money and bought this ground of an old Indian woman; it was only a small clearing, with a dozen fruit-trees. The family lived in a rough shed until they could build a thatched house, and Platt himself had to bring provisions from Santarem, six miles, on his back.

It was a long time before he could cut a road, and longer before he had horses for his work.

Consider the difficulties that this man had to meet. In the United States an emigrant without money will generally find employment of some kind, until he can start a farm of his own. Moreover, when he is able, he can get tools, machinery, whatever he needs, close by home and at a low price. His crops meet with a ready sale; railroads and steamboats bring the market to his door; his land increases in value constantly with the growing population. But these Santarem Americans were brought face to face with the matted forest; they could not work for other men, except at such a price as the Indians get—fifty cents per day at most; their market was unreliable; they were forced to mortgage their crops in advance to obtain tools and provisions for their families, and hence they always sold at a disadvantage. Finally, they had no machinery for their work, beyond what they could make themselves. Platt had to grind his cane with a rough wooden mill until he could procure an iron one from the United States,—at double the original cost, no doubt. He had to get his still on credit, and pay a high price for it; horses, oxen, carts, casks, were all obtained by slow degrees, and at a great sacrifice. He has been his own carpenter, mason, machinist, everything; it was a long time before he could even hire an Indian to work for him. And now, after seven years of hard struggle, he finds himself with—what? A plantation that he could not sell for one-fourth of its real value, simply because there are no buyers; a burden of debts that it will take him a long time to pay; and himself with a broken-down body and a discouraged heart.

This is the hard reality, which every penniless immigrant must find for himself in Brazil. It is not the fault of the

country ; the Amazons Valley is as rich as our western prairies are. But in the West a man works with other men ; besides the farmer-immigrant, there are blacksmiths, carpenters, machinists ; agriculture and manufactures go hand in hand ; division of labor pushes everything forward, as in a rapid river. On the Amazons a poor man has only himself to depend upon ; he is in a stagnant pool, a standstill country. Without money he will advance very slowly, and his ultimate success is altogether doubtful.

“ It is a vulgar error,” says Mr. Wallace, “ that in the tropics the luxuriance of the vegetation overpowers the efforts of man. Just the reverse is the case ; nature and the climate are nowhere so favorable to the laborer.”

In so far he is right ; no doubt what follows was written conscientiously, and other men have thought as he did.

“ I fearlessly assert that here the primeval forest can be converted into rich pasture and meadow land, into cultivated fields, gardens, and orchards, containing every variety of produce, with half the labor, and, what is of more importance, in less than half the time that would be required at home, even though there we had clear instead of forest ground to commence upon. . . . Whatever fruit-trees are planted will reach a large size in five or six years, and many of them give fruit in two or three. Coffee and cacáo both produce abundantly with the minimum of attention ; orange and other fruit-trees never have anything done to them. Pineapples, melons and watermelons are planted, and when ripe the fruit is gathered, there being no intermediate process whatever. Indian-corn and rice are treated nearly in the same manner. Onions, beans, and many other vegetables thrive luxuriantly. The ground is never turned up and manure never applied ; if both were done it is probable that the labor would be richly repaid. Now, I unhesitatingly affirm, that two or three families, containing half a dozen working and industrious men and boys, and being able to bring a capital in goods of fifty pounds, might, in three years, be in possession of all I have men-

tioned. Supposing them to get used to the mandioca and Indian-corn bread, they would, with the exception of clothing, have no one necessary or luxury to purchase ; they would be abundantly supplied with pork, beef, and mutton ; poultry, eggs, butter, milk, and cheese ; coffee and cacáo, molasses and sugar, delicious fish, turtles and turtles' eggs ; and a good variety of game would furnish their table with a constant variety, while vegetables would not be wanting, and fruits, both cultivated and wild, in superfluous abundance and of a quality that none but the wealthy of our land can afford. And then, having provided for the body, what lovely gardens and shady walks might not be made ! How easy to construct a natural orchid-house, beneath a clump of forest-trees, and to collect the most beautiful species found in the neighborhood ; what elegant avenues of palms might be formed ! what lovely climbers abound, to train over arbors or up the sides of the house ! ”

Now, if Mr. Wallace had come here with his “ two or three families, containing half a dozen working men and boys,” the party would have found themselves in very much the same plight as Platt and his family ; and, at the end of five or six years, they would have been no better off than he is. Your immigrant cannot live as the Indians do, because he has not the woodcraft, the training from childhood to a wild life, of the brown workman. He can clear land, and plant fruit-trees and mandioca, but it will be hard work and a hard life ; he is not likely to think much of vine-covered bowers and palm avenues. I do not say that the dream cannot be realized, but it would require capital to start with, and years of labor. Moreover, the immigrant, living in the woods, must be deprived of all social advantages. “ The children have no schooling,” complains Mrs. Platt ; “ they can't even go to a Brazilian master, for we are too far from town.” She talks of sending them to the States, but I fear it will be a long time before her husband can afford that. The family are Protestants, but they never hear a Protestant service now, unless, rarely,

when a missionary or travelling minister passes this way. Sometimes they visit with the Americans, but the plantations are far apart, and the roads are rough, and it is not often that they can make a holiday, unless it be of a Sunday.

The only near neighbor is Platt's partner, who lives close by. His house is built of hewn logs and has a good wooden floor; probably twice as much labor was expended on it as would have sufficed to build a good frame house at the north. Only a few woods can be used for such work; they had to be sought out far and wide in the forest, hewn with axe and adze into a square shape, and then dragged in with oxen. The planks for the floor were obtained from a saw-mill, belonging to another American; before this saw-mill was erected, all the boards had to be hewn out by hand. The roof is of palm thatch, which can be laid on in a week or two. Tables, chairs, benches, are all of hewn boards, prepared, with immense labor, by one man.

From the houses a steep road leads up the face of the bluff to the cane-field above—a beautiful road, all arched over with forest-trees, and draped at the sides with a confusion of vines, of fifty species. From the bluff we can look off to the Amazonian flood-plains, and beyond, if the day is clear, to the blue highlands of Monte Alegre. Near by we see the sandy campo, sharply divided from the forest, and outlying hills cut off from the main bluff; through all, there is not a sign of cultivation, except in the clearing below. The few Indian houses are buried in the woods, and their plantations are out of sight.

The cane-field itself is a splendid sight; the stalks ten feet high in many places, and as big as one's wrist. This is the rich *terra preta*, "black land," the best on the Amazons. It is a fine, dark loam, a foot, and often two feet, thick.

Strewn over it everywhere we find fragments of Indian pottery, so abundant in some places that they almost cover the ground.

Gradually we extend our excursions along the woodland paths; we hunt for insects; observe the ways of birds and quadrupeds; daily increase our stock of forest lore. None of these paths extend very far back into the forest; in fact, the American plantations are the farthest limits of civilization in this direction. Somewhere in the interior there are wild Indians, but no one here has ever seen them; the tame Indians are harmless enough—good, simple people, who stand very much in awe of the whites. They have thatched houses scattered along the streams, and little plantations of mandioca in the forest; dress carelessly, in the European fashion; have adopted some of the European vices mildly, and never aspire to better their condition.

After awhile we find our way to other American houses; the nearest of these are at Diamantina, a little settlement, two or three miles beyond Platt's house. Our first walk to this place is worth remembering, because it shows well the little every-day incidents that make up life here.

It is a pleasant, shady road at first, leading down a forest-clad slope and into a valley, where the vegetation is thick and high. Beyond, there are old clearings—*capoera*, the Indians say—which have their own luxuriance of tall *Solanaceæ*, and young trees, and flowering vines. Still farther on, the road descends again to a clear water-brook, with overhanging ferns and caladiums. About this brook there are numberless paths, leading to Indian houses here and there; quite civilized and good-natured, the brown people are. We stop at one or two of the houses and chat with the inmates, who are very neat, and often good-looking.

The Indian laborers are almost the only help that the colonists can get; they are willing enough, but very unreliable; restraint is irksome to them; as soon as they have a few milreis in their pockets, they go off on some hunting or fishing excursion, and leave their employer in the lurch. It is a mistake to suppose that they are constitutionally lazy; they are rather childish, and improvident. An Indian will often do more for good-will than for money. The Americans say that it is easier to get steady workmen now than it was when they first came here. The forest people are beginning to see the value of constant employment.

The Indian houses are away from the path, in little, cleared spaces—never in the shade. But now we enter a larger open space, where the Americans have cleared away the second growth and planted the ground to grass. Mr. Brown and his sons are coming in from their work; we are in time for the ten o'clock breakfast. So we are regaled with fish and mandioca-meal and corn-bread—farmers' fare as the Amazons country goes; plenty of fruit after it, and bowls of a delicious drink made from the acid *copo-assi* fruit. Breakfast over, we chat with our host, and stroll out with him to visit the cane-field, which is well advanced; but we hear the same story as with Platt—increasing hard work for a bare subsistence, and no schools or society, or hope for the future. Brown wishes, with all his heart, that he were back in Tennessee.

We stroll down this path and that, sometimes meeting groups of Indians—*Tapuios*,\* they say here—who pass us with a "*bons dias*," and a smile. At length we are accosted

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\* Indians of the great Tupi nation used the word *tapuyá* to designate the roving tribes of the interior. The name, modified in the Portuguese, has since been applied, by the whites, to all the semi-civilized Indians, including the Tupis themselves.



by a loquacious fellow, who has clearly had more than his morning dram from the American stills. Now, your Indian drunk is always an Indian affectionate. To us, therefore, comes this smiling gentleman, and will enter into bonds of eternal friendship; desires to know the use of our insect-nets; and finally insists on guiding us to a swamp where the *bichinhos*,—in Tapuio-Portuguese, little beasts—are without number, and most beautiful. We are not unwilling to see the swamp. As it happens, however, our friend never reaches it at all; he gravitates to a still-house, and there his negotiations for *cachaça*-fire-water promise to be interminable; we leave him, and go on, moralizing. This man, we will suppose, has earned a milreis—fifty cents, more or less—working for some American. He spends half of his money in a grand spree; gets dead drunk, and sleeps, in dew or rain, all night out of doors. He has had no dinner, and he will get no breakfast; but he will come for work to-morrow morning, and keep at it steadily all day, without appearing at all the worse for it. He may not repeat his spree for a month; the Indians are sober generally; some of them do not drink at all, or content themselves with a small glassful of rum. The few habitual drunkards among them are thoroughly despised by the rest. Young men get merry at a dance or *feira*; that is the affair of a night, which is sanctioned by custom, and does no harm. There is very little hard drinking among the whites, either, except with the lowest class of Portuguese emigrants. The negroes are worse. But on the whole, I believe that liquor has done much less harm here than it has at the north. As public sentiment goes, the Americans are no more blamed for rum-making than they would have been in the United States fifty years ago; but most of them dislike the business, and would give it up if they could.

The still-house belongs to a Carolinian, who came here after the time of the Hastings colony, and is doing better than the rest, because he had some money to start with. Diamantina has the advantage of an excellent water-power, and Mr. Ray is utilizing this by building a dam and a large wheel, by which his cane-mill will be run. The cane, cut on the bluff above, is brought down by a great chute—a trough six feet wide and probably five hundred feet long, every board of which was hewn out by hand. Wheel and dam and mill-house have all been achieved by the same slow, toilsome, hard work; a pitiful waste of time and strength; but there is no choice here.

Ray's house is really very pretty; to be sure, it is covered entirely with palm-thatch; but the wide hall through the middle looks cool and inviting; there are orange-trees on either side, and a flower-garden in front, with a beautiful clear water-stream where Ray has built a bathing-house over the water. The whole looks so neat and tasteful that we half believe in Mr. Wallace's romantic dream after all. But there is the drunken Indian at the still, and Ray's tired face taking the color from the picture. Mrs. Ray speaks sadly of her Charleston home and the intellectual society which she left there. I fear that this family is hardly better satisfied than are the others.

We dine with Mr. Ray, and at nightfall stroll back to seek our quarters at Platt's house. But, either from the darkness or from our own heedlessness, we miss the way, and keep on until we reach the low meadows that stretch inland from the river. It happens that Mr. Platt's negro man is here, catching horses with a lasso, and he good-naturedly invites us to ride back with him. The horses are half wild and wholly vicious; but, being tired, we venture to mount them,

though we have neither saddle, nor stirrup, nor yet a bridle, but only ropes tied around our horses' necks, wherewith we are to guide them. It is dark already in the meadow, and the forest road is as black as midnight. As we enter it, somebody's hat is knocked off—prelude to our griefs, for the hanging vine-stems are many, and the road is long. The hat is picked up, and our steeds are turned by main force, we tugging at the ropes around their necks. Now a branch catches us under the chin; relieved from that, our heads are pounded with a big vine-stem, and our arms are twitched by briars. We enter into the spirit of the ride; the horses are galloping, at all events, and we follow the negro's white hat as the cuirassiers followed Murat's plume. Our horses have backbones—two or three, possibly, on top of each other; and then our feet are like lumps of lead; we wonder why, in our boyish horsemanship, we were never troubled with our feet. We give up trying to guide our animals; their natural instinct, or original sin, does at length carry us through to Platt's house, but not until we are covered with perspiration and aching in every bone. There is much laughing over our mishaps; the negro rolls up his eyes, and privately declares that he will take no more rides in our company; small comfort to us, who supposed we were following his lead. But he says he was ashamed to stop when he saw us coming so fast. May his next adventure end in a broken skull!

In course of time we leave our pleasant quarters at Platt's, and go to live with other American families at Panéma, five miles away. A motherly hostess we find in kind Mrs. May, and a good friend in her son, who interests himself in our zoölogizing, and proves to be a capital collector. For sleeping quarters we have a house of our own, a deserted

one in the woods, a quarter of a mile away from the others. It is nervous work, sometimes, walking out to this place, of a dark night.

There is a great gap in the roof; the season being pleasant, and we careless naturalists, it remains unmended, until one night a driving storm comes up; then the rain sweeps on us like a cataract, and we are soaked through in a trice; a second blast brings down our swing-shelf, with the precious collections, tumbling about our heads; we try in vain to light a candle, and at length resign ourselves to shivering in the dark and drip until the storm ceases. As it turns out, the damage is not very great, but the lesson is a good one.

Mr. May's establishment is small; but there is another one near by, which is by far the most advanced in the colony. The proprietor was a Methodist clergyman in Mississippi; like many of his class, he had a ready capability for all kinds of work; was, in fact, the very best man that could be chosen for a pioneer. Moreover, he had a little money to start with, and two stout boys to assist him in his work; he was sensible enough to choose a most desirable location, where the land was rich and there was abundant water-power. With these advantages he has advanced steadily. At first, he was content to live in a log-house, and work with such machinery as he could get in the country; when his plantation was well advanced, and he thoroughly understood his needs, he made a trip to the United States expressly for the purpose of bringing out machinery and tools. One of these importations was a saw-mill; with this he sawed out boards and beams for a good frame house, and a great deal for sale besides; he has built mills for grinding corn, beating rice, cutting cane-tops for his cattle; a blacksmith-shop, very

well equipped; a fine cane-mill, and evaporators for sugar. He has reason to look forward with hope to the future.

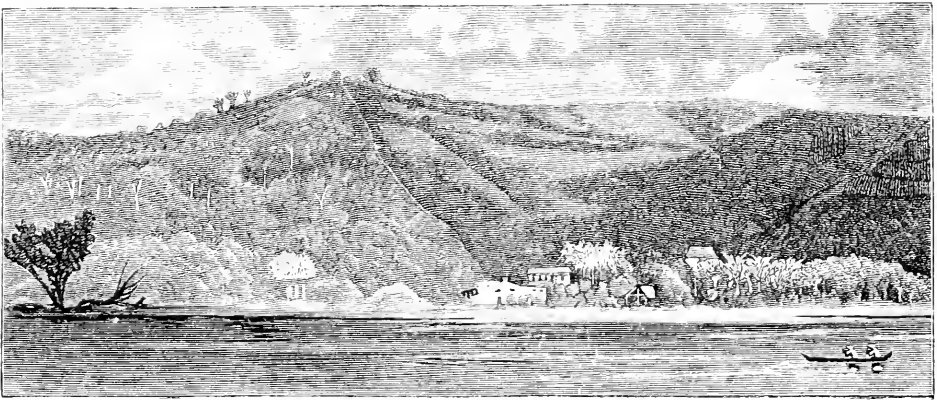
This man and Mr. Ray, at Diamantina, are the only ones in the colony who have achieved anything like success. But these two were not a part of the Hastings company; they came alone, chose their ground carefully and worked carefully, with a fixed end in view; and having capital in the outset, they were independent of the traders, and could get a good price for their produce. They would have succeeded anywhere; better, probably, in the United States, than here. Both mourn the want of Protestant churches, and schools for their children; they have learned that Brazilian custom-houses and government officials are sad drawbacks on their enterprise.

The Americans at Diamantina and Panéma are generally discontented with their lot, and no wonder; they began work without capital, or with very little, and they have been struggling all along for a bare existence. Their example shows, plainly enough I think, that the Amazons is not good pioneering ground for a *poor* man. But the other question comes up: Is it a good field for labor and capital combined; if a man comes here with money, can he make money, and live happily? Mark, this question has nothing to do with the comparative merits of Brazil and the United States; in nine cases out of ten, I believe, an American will be happier in his own country than he will in any other. But a man may be forced by his health, by business relations, custom, what not, to find a home in the tropics. He has money to start with, or a rich partner to support him; can he do well on the Amazons?

Mr. R. J. Rhome is a practical American. In other words, a man who believes so thoroughly in his own theory that he

is willing to put it to the test. He had a theory that the Amazonian highlands were fitted for successful farming. So he came here with his family, took the managing partnership of a Brazilian plantation, twenty miles below Santarem, and put his theory into practice. At the end of twelve years, the estate has become the finest on the Amazons, and American enterprise has built up an American home.

He stands on the bank, waving his broad-brimmed hat, and welcoming us as we land with a stout American grip.



Taperinha Plantation, from the River.

Friend of four years' standing, or stranger of to-day, it is all the same to this overflowing hospitality; so we are seized and marched off to the house, where we get another greeting from kind Mrs. Rhome and the bright-eyed, healthy children. The house-servants scramble to prepare a room for us; three or four negroes hurry down to the canoe for our luggage; even the dog wags the whole hinder portion of his body in sympathetic welcome.

The bath follows, of course; a dip in such cold, limpid water as we have seldom seen in the tropics; and Mr. Rhome has a bathing-house where you can swim in the cement-lined basin, and take a shower of a hundred gallons a minute. Then we sit down to a bountiful table, whereof every dish is

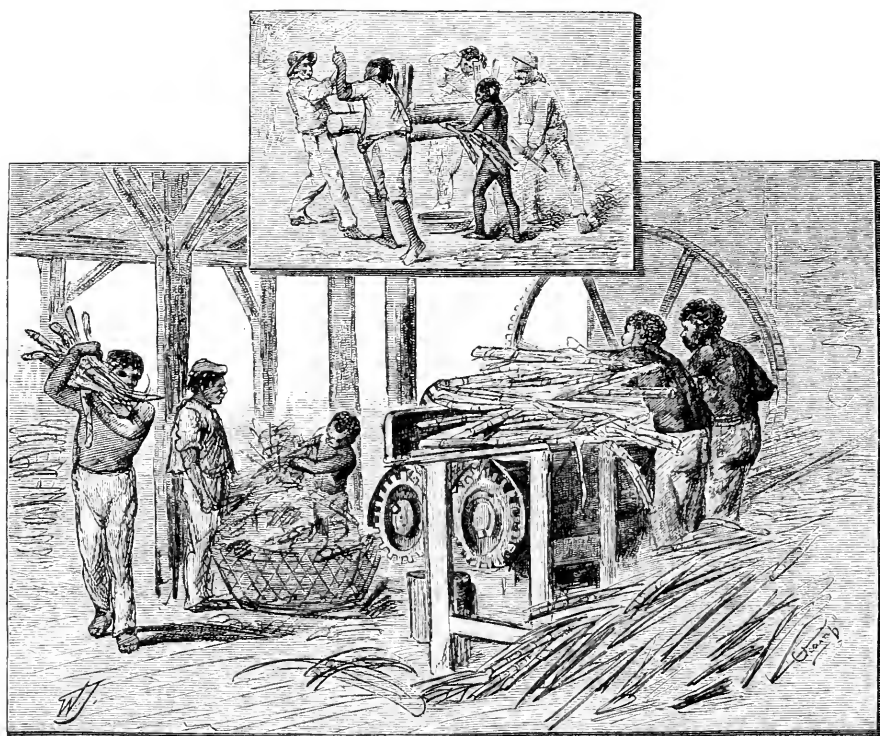
the product of the plantation, or of the surrounding woods and streams; even the wine, equal to most grape-wine, is made from native cajú fruits, and our after-dinner cigarettes are of fragrant Taperinha tobacco.

What next? Our kind host is already planning a score of excursions—to the forest, the lakes, the highland streams, —anywhere for miles around. But there are a thousand things to interest us nearer home, on the plantation itself.

The estate, joint property of Mr. Rhome and the Baron of Santarem, is measured, not by acres, but by square miles; there are highland forests and lowland pastures, lakes stocked with fish and turtle, and streams with water enough to turn heavy mills. But when our host came here, the plantation was run after the old, narrow, Portuguese style, saving a cent and losing a dollar; much labor was wasted for want of proper superintendence, and the proportion of cultivated land was very small. Since then, improved machinery has been introduced; the great cane-field has been widened, year after year, and that wonderful novelty, the plow, has turned up rich black land that had not seen the light for centuries. It is a luxury to find what intelligent labor can do here.

In the tile-covered mill-house, half a dozen stalwart negroes are employed in “feeding” the great cane-mill, and carrying away the crushed refuse. Near Santarem we saw the Indian mill—a pair of squeaking wooden rollers, turned by four men, with an immense expenditure of breath and muscle. Certain Brazilian plantations have larger and more elaborate wooden mills, turned by horse-power, and a few boast of iron ones, made in the southern provinces. But Mr. Rhome assures us that his American mill has effected a saving of at least twenty-five per cent. over the Pernambuco machine that was formerly used here; and of course, the

daily grinding can be greatly increased with the capacity of the rollers.\* As on the other American plantations, most of the cane-juice is distilled into rum, which commands a ready sale along the river. Mr. Rhome has introduced improved sugar-evaporators, and he believes that sugar-making will prove very profitable.



The Cane-mills—Old and New.

Besides the cane-machine, there is a saw-mill, one of four or five on the Amazons; for the native carpenters are still content to saw their boards laboriously by hand, or hew them out with an adze. From the blocks and chips lying around, our host picks out a dozen beautiful woods—timbers that would be a fortune to our cabinet-makers. There is *jacarandá*, or true rosewood, and iron-like *moirapichuna*, and rich

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\* French sugar-machinery is popular near Pará, and in the Southern Provinces, where American mills are also used.



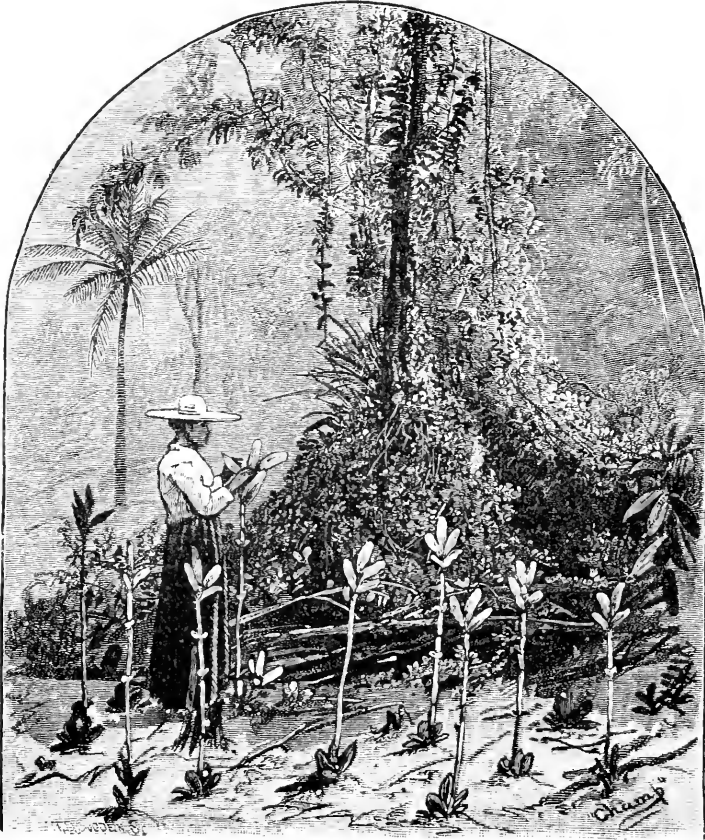
brown *páo d'arco*; most elegant of all, perhaps, the *moiracoa-tiára*, striped with black and yellow; all these, and fifty others, will take a polish like glass, and some of them are so tough and durable that they are employed to advantage in the place of brass and iron. The very posts on which the mill-roof is supported are fine cabinet timbers, and the machinery is mounted with woods of wonderfully rich color and grain.

The Taperinha mills are run by a turbine-wheel, a machine which is a standing wonder to all the country-people. As for the artificial canal which furnishes the water-power, that was made long ago, by a former proprietor; the banks have been softened down and padded with greenery for years, until they rival a woodland stream in their richness. Here the drooping vines are reflected, and round-leaved water-plants float on the surface, and the wizard sun comes down through the overhanging branches, with those matchless tricks of light and shade that are an artist's joy and despair.

If we follow up the canal, we reach the thick forest; and just within there is a magnificent spring, or rather lake, from which the water flows. I always bless the good sense that has left this place untouched by axe or wood-knife. It is so secluded here that the forest animals come to drink; so still that the crack of a broken twig drops back in echoes from the wooded hill-side. A hundred feet above, the palm-leaf-lets tremble with a breath of wind; but the water below is wonderfully smooth: a leaf, circling down to the surface, sends tiny ripples to the very brim. Far below, the scene is reflected as no artist could paint it, as no pen can describe it; airy lightness of assaí palms, fret-work of tree-ferns, the superb towering forest, the glory of a thousand mornings thrown over all. Even these tiny islets have been touched and retouched with loving fingers until the impossible is

realized in their fairy groves, and the palms bend over with quivering joy, to catch a glimpse of their beauty.

Yet even in this charmed retreat we are warned of the evil side. For thousands of mosquitoes come charging up from the swamps, and march seven times around us, and



Picking Tobacco-leaves.

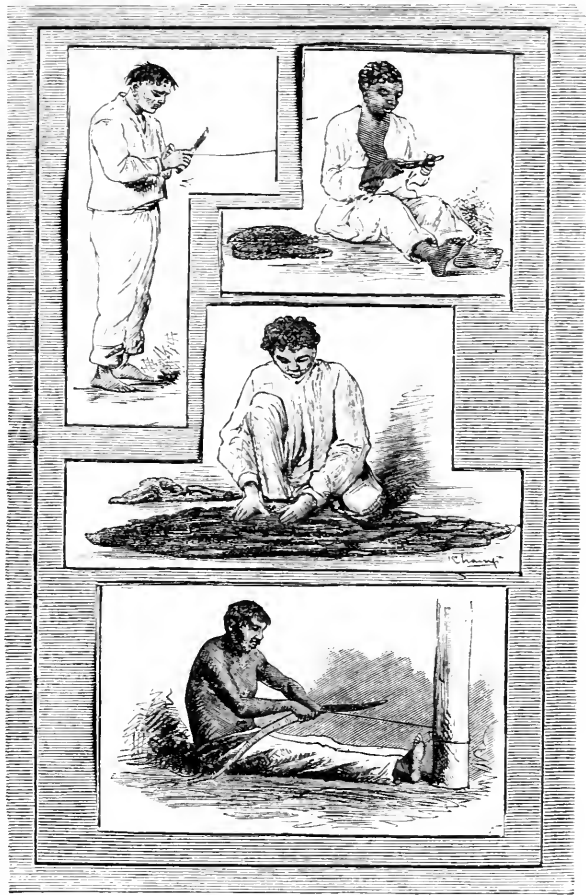
sound their horns, and take us by storm, and slay and spare not. It is hard to appreciate even such scenery, when it involves a kind of St. Vitus's dance on the part of the spectator: when the winged freebooters go flying slowly

off from your body, just able to carry the pint or so of blood with which their stomachs are distended. If the mosquito were only susceptible to moral suasion! But he is as heartless as the New York small boy; he laughs at your torments, and makes merry with your woe, and dances diabolically on his hind legs to see you slapping yourself, and grins when you gnash your teeth. And then, when you are routed, he gathers with his comrades on a palm-leaf, and lifts up his

voice in songs of mirth and gladness, and sleeps with a peace that passeth all understanding.

But at Taperinha, the mosquitoes keep to the woods, only coming out at night, when doors and windows are securely barred against them; so we can converse sociably of an evening, and sleep in our cotton hammocks undisturbed.

There are plenty of interesting things to see about the house. Fifteen or twenty men and women are employed here in preparing tobacco by the Amazonian process, which is as different as possible from ours. The leaves are picked from the stalks one by one, as they are large enough; slightly dried for a day or two, under shelter, and brought to the house in great baskets. Here the mid-rib is removed by boys and women, and the leaves—two, four, or eight pounds together—are spread out in layers, one over the other, rolled together, and bound with strips of bark. Next, the roll is wound tightly with heavy cord, as thread is wound on a spool; the strongest workmen are chosen for this part of the pro-



Preparing Tobacco.—1. Splitting Jacitára. 2. Stemming.  
3. Spreading the Leaves. 4. Rolling.

cess, and one of them can wind no more than fifteen or sixteen *molhos* in a day, twisting the roll with his hands, while the cord, thrown about a post, is held tightly with the foot. In this manner the tobacco is very strongly compressed. The roll, after winding, is left for several days, until it will retain its form; then the cord is removed, and long strips of *jacitára*—the split stem of a climbing palm\*—are wound on in its place. The tobacco goes to the market in this condition, but it is not considered good until it has passed through a fermenting stage, which is only completed at the end of five or six months. Then the roll is hard and black; people shave it off as they want it for pipes and cigarettes; the Indians make large cigars with wrappers of *tauari*† bark, but they are generally satisfied with a few whiffs, and the cigars are stuck behind their ears, to get them out of the way until they are wanted again.

Roll tobacco brings from one dollar to one dollar and a half per pound; but the profit is limited, because no means have been devised for shortening the process of manufacture and doing away with the heavy manual labor involved in it. And in this, as in everything else, Brazilians object to any other method of curing the leaves, because they are wedded to the old form.

Even the commonest labor here gets a touch of warm tropical color and motion. A dozen or more women, preparing tobacco on the piazza, form a group the like of which would be utterly impossible at the north; and yet I could no more analyze the scene than I can describe one of the cocoanut-palms outside; I see here only a number of decidedly ugly faces and brown or black arms, with not over-

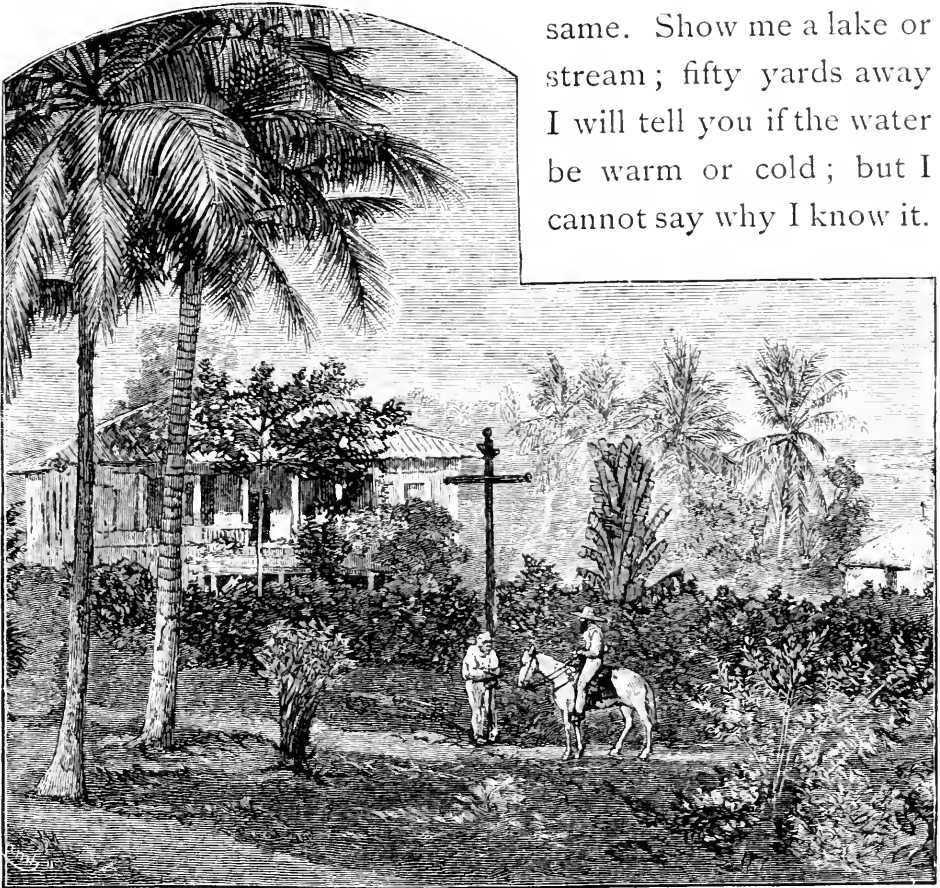
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\* *Desmoncus*, sp. var.

† *Couratari gujanensis*, etc.

clean sacks and skirts ; and the palm is only a crooked gray stem, and a mass of scraggy leaves ; yet both the pictures are superb beyond language. I cannot even say *why* they are tropical ; for the women might be in an oyster-shop at Baltimore, and the palms would grow in our green-houses ;

but they would not be the same. Show me a lake or stream ; fifty yards away I will tell you if the water be warm or cold ; but I cannot say why I know it.



The Plantation House, Taperinha.

I can only describe these scenes by telling of my own inability to draw the picture. Look at that great negro, recalling the Discobolus with his brawny arms, as he twists the tobacco-roll ; but the Discobolus is only still, white marble ; this man is living flesh and blood, with a dash of equatorial glow thrown into his dark skin. Look at that lace-maker.

Was ever a *genre* painting made to equal it? Yet the girl is plain enough, and her actions are simple. Our host, even, is a Brazilian-American—not by language, nor manners, nor dress, but by an indescribable *tout ensemble* that would disappear in a two-weeks' voyage. I think the most familiar thing about the house is the imported cat; but then, cats are tropical everywhere.

One evening, Mr. Rhome arranges a rustic dance among the people. It begins in the orthodox Amazonian manner,



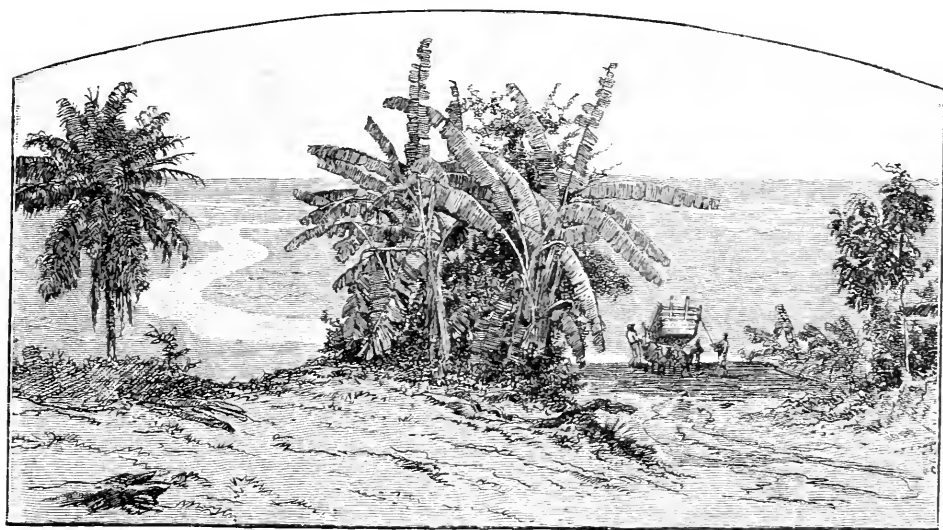
Lace-maker.

with a singing prayer-meeting in the little chapel, to which worshippers are called by the monotonous beating of a great drum. Then, when the concluding *Pai-Nosso* is sung, and the saint's girdle is kissed,

the leader turns master of ceremonies, and such nondescript dances follow as could only originate in the fertile brain of a negro. There is an indescribable mingling of weird and comic in the scene: the dark faces and arms, set off by white dresses; the octogenarian negro, striking his tambourine with a trembling hand; the half-naked babies, tumbling about under the feet of the dancers; the dim, flaring lamps, half lighting, half obscuring the moving figures. We sit and watch them until midnight, and then go away as one

goes from a theatre, dropping out of dream-life into the dark street.

You call me an enthusiast. Well, but a Stoic would turn enthusiast here. Follow the road that leads up to the great cane-field; there were banks at the side once; but they are covered now with such a glorious mass of vines that Nature seems to have outdone herself in decorating—what? A mere clay-heap—nothing more. And if Nature can grow enthusiastic over a clay-bank, surely our own enthusiasm over her masterpieces may be pardoned.



Looking down from the Cane-field, Taperinha.

The hill-side is all aglow. I am afraid, after all, that our frequent stops are less to get up panegyrics on Nature than to fan ourselves with our broad-brimmed hats. But on top the breeze is fresh and cool; a breath of the trade-wind coming up the valley from the Atlantic. We are on the edge of the southern plateau; the ground about us is a dead level, sinking suddenly to another dead level, five hundred feet beneath. We can look across the flood-plains, thirty

miles or more, to the blue hills of Monte Alegre and Ereré; down below us the River Uaiaí\* winds like a ribbon through the green meadows; there are a few lakes in sight, but nothing like the spattering of them that we have seen in other places. In their stead we only notice the lines of swampy forest, and strips of arums, and clumps of bushes, all running parallel to the channel; seams left by the Amazons in sewing this patch-work together.

Back of us, the great cane-field stretches half a mile or more in every direction, fresh, green, waving,—the prettiest sight a planter's eyes could find. The cane is cut by hand, and brought to the brow of the hill on ox-carts; there it is thrown into a long chute, which deposits it cleverly in the mill-house. A pair of unlucky oxen managed to get into this chute one day, and the poor things were tossed down in half a minute, mangled and killed of course.

Every-day life at Taperinha gets its dash of the forest. "By the way," says Mr. Rhome, "have you ever seen a tapir?" And he is reminded that one was killed last night; we are to have a bit of its meat for breakfast. Two men have slung the carcass to a pole, and they find it a heavy load for their broad shoulders; but they do not attract much attention, unless from our own unaccustomed eyes. The hunters tell us how these animals are found in the dry forest, but come down to the pools to wallow and drink at night; how they eat fruits and leaves, and can be hunted without danger because of their timidity. If the country were not the vast desert that it is, the tapirs would soon be exterminated, for their flesh is excellent, like tender young beef.

The Indians bring deer, sometimes, and wild hogs, and

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\* Pronounce it Wa-ya-yá.



cotias, and pacas; Mr. Rhome shows us the skins of half a dozen jaguars and pumas which have been shot about the estate. One might hastily infer that the forest is crowded with game, just as it used to be represented in the geography pictures; but in point of fact the hunters often search for hours, without seeing so much as a monkey or a squirrel.

The provision houses are the lowland lakes and channels. We can go out any evening with the fishermen, who supply not only the proprietor's table, but the people of the estate. Motherly Mrs. Rhome packs away a great basket of provisions for us, and we take care to go with thick coats, for the night air is cool. Thus fortified, we seat ourselves with our host in the middle of a wooden canoe, among heaps of caraná fagots,\* which are to be used for torches.

The river is still and dark; we see the stars reflected in it, and flickering with the current until we can hardly tell them from the dancing fire-flies above. Clumps of forest stand out vaguely over the meadows; in the shadow you cannot tell where water ends and land begins. The men paddle swiftly but silently; we can hear fish leaping from the water, night-birds complaining from the solitary trees, frogs and crickets in the marshes, a stray alligator, maybe, rippling the surface as he disappears beneath it. And the imagination looks into the depths and sees strange forms, undefined beings, rising slowly from the shadows, waving and beckoning, and sinking back into the water, and lifting themselves again to gigantic heights. O Night and Solitude! Ye are the peopled, the full of life!

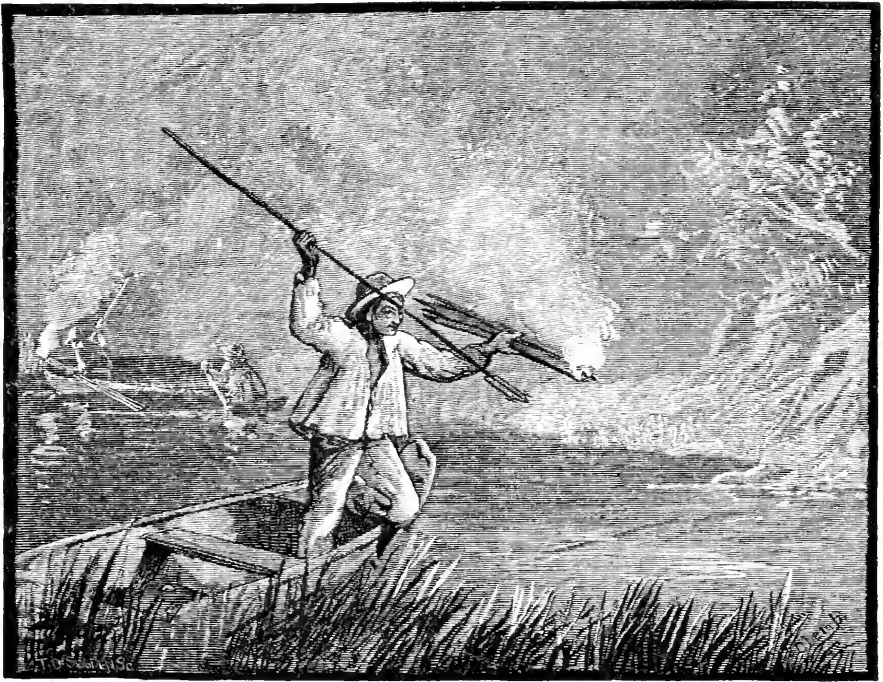
Our fisherman lights his torch and throws a ruddy glow over the water. Now our phantoms hide among the reeds,

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\* The leaf-stalks of a lowland palm, *Mauritia caraná*.

and peep out from behind the tree-trunks, and move their wings overhead as they flit past us: childish monsters that fly the light and yet return to it; gigantic human moths; vapory bats and owls.

Flap! The man in the bow has speared a fish in the shallows: waving the torch with his left hand, while he uses the trident with his right. Flap, flop! A big carauaná is squirming about in the bottom of the canoe; the ghosts start in dismay, and fly silently into the darkness. And the torch



Fishing by Torchlight.

flares and leaps, and sends great rockets after them, and flickers down to a coal, and flames up angrily to grasp their returning forms. Flop! There is another fish—and another—a harvest of them; the torch-holder cannot spear them fast enough; and ever, as he raises his arm, a shadow springs away behind his half-naked body, and dives under the canoe, and dances up on the other side, and disappears into the

unknown, and brings back a thousand more to the harmless warfare. We paddle slowly about among the grass-clumps, sometimes startling a bird on an overhanging branch; once the poor bewildered thing comes within reach of a boatman, who catches it in his hand to carry home to the children; and the ghosts and witches throw themselves aloft with mad joy, and sink to despair in the inky waters, rustling the leaves above, and vanishing into nowhere, and forming themselves again out of nothing, until the torch goes out and leaves them masters of the field; and we go home to sleep into the bright morning and the unpeopled reality.

The reality is better, though. The orange-trees are drinking in sunshine; the palm-leaves wave and nod, and toss the light about with their delicate fingers, and make kaleidoscope patterns for their own adornment. No, no! The day, too, is full of people—my people—real bodies and hearts, making up this great, quivering still-life, with its wonderful unity, its infinite variety. People talk about palm-trees, as though they were all one. There are thirty kinds of palms around Taperinha, from the four-foot-high *marajá-i*\* to the towering *inajá*,† and every kind has its own superb majesty, or delicate grace, or mild, tender beauty. Now I am a lover of palms. If anybody else insists that they are like “feather-dusters struck by lightning,” then I wish them joy of their opinion. But really, there is as much difference between the described palm and the real one, as there is between a feather-duster and the bird that wore the feathers.

Nature forms wonderful combinations with palms. We have seen them about the Breves channels, where the forest is resplendent with their regal processions. But along the

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\* *Bactris*, species: there are many.

† *Maximiliana regia*.

highlands are fairy palaces, where their beauty is more quiet, perhaps, but so warm and tender that we forget all about their princely lineage, and grow familiar with them, and form special friendships, just as we would with beeches, and oaks, and elms.

Many kinds gather about the swift-flowing streams, for they love to have their roots bathed always in the cool water, while their leaves reach up toward the sunshine. There is such a stream near Taperinha—the Igarapé-assú—and I think I never appreciated the possibilities of palm scenery until I went there.

The mouth of the Igarapé is lost in floating grass, through which the canoe must be pushed for half a mile or more. By and by we enter a narrow stream, bordered on either side by thickets of fan-leaved *caraná*\* palms, and pretty *marajás*;† these two grow only on very low, wet land.

It is rarely beautiful, even here; but farther up, the swift stream is all closed in and arched over with trees, and there the *assaís*‡ grow in thousands; slender stems throwing themselves fifty or sixty feet into the air, and leaves all alive with that tremulous motion that is seen with every palm, but never so perfectly as in the *assaí*. The banks, too, are covered with broad-leaved plants, and there are great philodendrons on the trees, and vines trailing from the branches; but all this tropical splendor is so mellowed and softened down, with touches of sunshine and curtains of shadow, that it comes back to the heart like strangely familiar music, heard now for the first time, but floating in the memory, far away, long ago.

From the head of the Igarapé-assú there is a little narrow

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\* *Mauritia caraná*.

† *Bactris marajá* ?

‡ *Euterpe edulis*.

path, leading back through swamp where one must wade up to the knees in black mud ; beyond, the trail passes on to the thick forest. There the salsaparilla-gatherers go every year, remaining for weeks together by a little muddy pool, where the water swarms with leeches ; yet it seems wholesome enough for drinking. I once spent four or five days at this place, going out every day with my Indian companions, who searched the forest for miles around our camp. After a little I learned to recognize the prickly salsaparilla-vine, and to distinguish from it two or three other species of similar appearance. The men showed me how to dig the roots with a sharp stick, taking care that the larger ones were not broken ; they were often ten feet long, but lay very near the surface. Sometimes we found half a dozen roots springing from one vine, together weighing perhaps two or three pounds ; they were all uncovered carefully, and cut off near the stem ; a little earth was then drawn about the stumps, so that they would send out new shoots. The salzeiros take mental note of these places, and return to them during the next season. One of our older hunters must have known the localities of several hundred vines ; in fact, all the Indians are remarkable for their local memories ; if once they have visited a spot they will hardly fail to find it again, even after many years.

I remember our long march home through the woods ; each Indian laden with sixty or eighty pounds of *salsa* and game, but trudging on merrily enough. The roots are sold to traders, and finally exported, in large part to Europe and the United States. No doubt the salsaparilla will be cultivated in time, as it might be with good profit. Mr. Rhome has a thriving little plantation of the vines ; but some years must pass before they are very productive. Other drugs, commonly obtained in the forest, are now produced on the

plantation. This shady colonnade is made up of *andiroba*-trees,\* and from their large, triangular nuts scattered on the ground, is obtained the bitter oil, used for burning and for medicinal purposes. This smaller tree is the *urucú* (anatto †), which has been cultivated by the Indians from time immemorial; the scarlet seeds are used for painting calabashes, and other small articles, and they are exported in considerable quantities. The magnificent castor-oil plants ‡ would be worth cultivating if only for their beauty; you will see them



Looking up the Uaiaiá from Taperinha.

about any country-house, groves that rival the banana-trees with which they are contrasted.

At Taperinha, as at Diamantina and Panéma, and far up the Tapajós, the bluff-land owes its richness to the refuse of a thousand kitchens for maybe a thousand years; numberless palm-thatches, which were left to rot on the ground as they were replaced by new ones. For the bluffs were covered with Indian houses, "so close together," says Acuña, "that from one village you can hear the workmen of another." The people made coarse pottery and marked it with quaint devices. We find fragments scattered everywhere, and Mr. Rhome has been making archæological collections

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\* *Carapa Guyanensis*.

† *Bixa orellana*.

‡ *Ricinus communis*, introduced from India. On the Amazons it is called *carra-páto*, (name of a wood-tick).

for years. He gets all sorts of curious clay figures : vultures' heads, frogs, a cock with comb and wattles complete,\* a whistle, and one odd-looking affair punched full of holes, which—so Mr. Rhome laughingly insists—must be a tooth-pick-stand.

We found the black land and its antiquities on the bluffs of Panéma and Diamantina ; we shall find it, also, all along the bluffs of the Lower Tapajós ; and here, twenty-five miles below Santarem, we find it again in a like situation. Now, all these bluffs are the edges of the same plateau, and the pottery and stone implements are everywhere similar. On the Tapajós the black land occurs at intervals of from one to five miles ; but from Panéma to Taperinha, and for some distance below, it forms almost a continuous line ; indicating, in fact, a single village, or city, thirty miles long, but extending only a little way in from the edge of the plateau. At intervals, there are signs of ancient roads leading down toward the river, as at Diamantina. Acuña gives no positive evidence of such a city ; he says only, that the Tapajós region is very populous, and that he and his party encamped near a village where were five hundred families. But we must remember that the bluffs do not border the main Amazons, except far below here ; Acuña, entering the Tapajós, may have encamped near Santarem, which is on lower land, five or six miles from the plateau ; or, if he ascended the river, he saw only the smaller villages, at Alter do Chão and beyond. We have no evidence that he penetrated inland at all ; he knew that there were many people on the hills, but he did not know that their villages were run together in a continuous line. Pedro Texeira, in his voyage to the Tapa-

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\* Acuña says that the Indians had fowls, descended from Peruvian stock which had been passed from tribe to tribe down the valley.

jós in 1626, would naturally have entered the main mouth of the river, first touching the bluffs near Alter do Chão, as is indicated in the chronicle : " He entered the river for twelve leagues," and then discovered the Tapajós Indians. So he can have seen nothing more than Acuña did in 1639.

In 1868, the Viscount of Porto Seguro disinterred an old manuscript from the Imperial Library of Vienna, and published it for the first time. This little book is entitled "Description of the State of Maranhão, Pará, Corupá (Gurupá), and River of the Amazons." It was written in 1662 or thereabouts, by one Mauricio de Heriarte, by order of the Governor-General, Diogo Vaz de Sequeira, and it gives a great deal of curious information, gathered, no doubt, from various Portuguese adventurers. Now, in this work it is distinctly stated that there is a great village, or city, of the Tapajós Indians near the mouth of the river.

" This Province of the Tapajós is very large, and the first village is placed at the mouth of a long and great river, commonly called river of the Tapajós. It is the largest village and settlement which we know of, up to this time. Alone, it sends out sixty thousand bows, when it makes war ; and because the Tapajós Indians are many, they are feared by all the nations around, and thus have made themselves sovereigns of all that district. They are corpulent, and very large and strong. Their arms are bows and arrows, like those of the other Indians, but the arrows are poisoned, so that, until now, no remedy has been found against them ; and that is the cause why they are feared of the other Indians." \*

A few antiquities have been found near Santarem, but there is no black land there, and no evidence of an extensive village. We must suppose, therefore, that Heriarte had reference to these bluffs, which follow the line of the Amazons

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\* Heriarte, *op. cit.* p. 35.



and Tapajós, but five or six miles inland.\* The Indians dwelt here because of the security which the high land afforded them, and because the sandy campo close about Santarem was unfit for cultivation. The Portuguese slave-hunting parties drove away the Indians, and when the missionaries arrived there was only a remnant left. But there can be no doubt that the Tapajós tribe occupied the bluff; whether they were the first tenants, or whether all the antiquities are to be referred to them, the archeologists must determine.

Among other objects that were disinterred at Taperinha, and described by the late Prof. Hartt, are several broken jars, containing fragments of calcined human bones, mixed with charcoal and ashes. We know that many of the Brazilian Indians were accustomed to bury their dead in the floors of their houses; our Taperinha tribe (either the Tapajós or their predecessors) held this custom, but it would appear that they were also cremationists; burned the bodies or bones, and placed them in jars before interring them.† The pots are curiously ornamented with angular figures; from these, and other ornamented pottery, Prof. Hartt drew many interesting conclusions. Stone utensils are much less common at Taperinha than they are on the Tapajós; they consist of diorite axe-heads, and a few other implements of the same material. I suppose that the bluff-dwellers tipped their

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\* See also, Barboza Rodriguez: *O Rio Tapajós*, p. 125.

† Prof. Hartt called attention to a similar fact in describing the burial-jars of Marajó. "The largest," he wrote, "were too small to accommodate a skeleton, even if disarticulated. All the bones found in the urns were fragmentary. The probabilities are that the bodies were burned, and that only the ashes and charred bones were placed in the jars. (*Amer. Naturalist*, July, 1871.) Barboza Rodriguez, I know not with what proof, writes that the bones were buried in "a kind of pot, which was placed in a jar ornamented with geometric lines." Among the Mundurucús of the present day, the bones of dead warriors are kept for three years in the houses; then they are placed in a jar and buried.

arrows with bone and bamboo, as the wild tribes do to this day; two or three beautiful flint arrow-heads have been found at Taperinha, but their very rarity leads us to suppose that they belonged to a much older people than the Tapajós. To this older tribe, perhaps, may be referred the great *Kjocken-mocding* shell-heap below the hill. The heap, which is at least twenty feet high, and a hundred yards long, is made up of river-shells, unios, castalias, and hyareas,\* it contains hardly any pottery, and the few fragments found are without ornament; a sufficient proof, I think, that it cannot have been formed by the bluff-dwellers, whose pottery fairly covers the ground in many places.† Our host has obtained very good lime by burning these shells, and other shell-heaps along the Amazons are used for the same purpose.

But the time comes when we must say a regretful *adeos* to our kind host, who loads us with favors and presents to the last, and sends a canoe to take us to Santarem with the treasures we have gathered through his kindness. Then there is the long night-ride, and the torturing mosquitoes, and the sunny morning, and the bright sand-beach by the mouth of the Tapajós, with its clusters of javary-palms. So, as we leave this American farmer, the important question comes up again: Is the Amazons an inviting field for American enterprise? Especially is it fitted for profitable farming?

By nature, yes. Perhaps so, even with the present barbarous laws that govern settlers. I believe that the Amazons Valley is by nature one of the richest agricultural regions of

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\* These shell-fish are sometimes eaten by the modern Indians, but they are little esteemed.

† The shell-heap has been described by Barboza Rodriguez (O Rio Tapajós, p. 36), and by Prof. Hartt.

the world. I wish also to insist on another fact. Rio de Janeiro is five thousand miles, in round numbers, from New York ; Pará about three thousand. Sugar-cane, cotton, and corn will all grow better here, and give larger and surer crops, than in the southern provinces ; I know this, not from the mere prejudiced reports of the planters, but by months of personal observation in both regions. And strange as it may seem to our merchants, the finest coffee in Brazil at this day grows on the Amazons ; it used to be produced in considerable quantities, but the industry was killed by the export duties and the lack of labor.

I feel sure that the northern provinces must eventually be the great agricultural regions of Brazil, not only because of their productiveness, but because they are nearer to Europe and America, the great markets. Then there is the further advantage of unrivalled water-channels for internal communication : in fact, the country seems fitted by nature for an agricultural community.

But here man steps in with his stupid laws and blocks the garden gate. On the Amazons there are land-grants for settlers, it is true, but they are involved in so much red tape that one never feels sure of his property ; and the expense of surveying, procuring papers, etc., is generally as much as it would take to buy the land outright. Machinery and agricultural implements are admitted free of duty ; but the owner is sure to have a vast deal of trouble at the custom-house, because the law is not well understood, or is purposely ignored ; and then there is the heavy expense of shipping. Finally, there are the insane export duties, which will ever remain incomprehensible to a thinking American. Why, for instance, should a duty of fourteen per cent. be retained on timber, when the simple fact that there is such a

duty keeps every stick of timber from the market? Why should a duty be kept on sugar, cotton, hides, when the only effect of the impost is to kill the industries altogether by preventing competition with other countries? It is like the stingy merchant who insists on charging double price for his goods, and only cheats himself by his meanness.

Mr. Rhome has had to work against these and a thousand other obstacles; but he believes that profitable farming can be carried on here, and his own plantation is a striking proof of his views. He has adopted the rule of improving on Brazilian methods of work rather than attempting to introduce novelties; and his produce is all sold in the province, so that it is subject to no duties.

After all, as I said before, it depends on the man. We have seen what Mr. Rhome has done. Well, he has succeeded because he is the man to succeed. Very likely, also, because he has found a rich and enterprising partner, with thirty or forty slaves to do his work. My dear friend, I would have failed utterly. So will you, very likely, and when you describe the Amazons valley you will nail "Abandon hope" over the portals and cry to all mankind that my misrepresentations led you to this Inferno. I cannot help it. I describe natural riches and natural scenery only half as brightly as I wish I could. I describe the drawbacks of the country as well as I can. I describe one man's success as I see it, but with the express addition that this success is exceptional, almost unique. I have known many good and enterprising men who have failed, or almost failed, on the same ground; I know a few who have succeeded.

In general, if a man has no money, I would say to him: Keep away from Brazil. Brains and muscle are worth at least as much at home, and if you fail you fail among friends. But

if you have a few hundred or thousand dollars to spare on the experiment ; if you are content to do without Protestant churches ; if you have no children to educate, or can afford to take a tutor with you ; if you can be satisfied with strange customs and little refined society, then you may go to the Amazons with a clear conscience. But go with a definite purpose. Don't waste your time on some vague idea of riches, to be gained you know not how. Go prepared to do hard work, with knowledge and judgment enough to keep you out of the fever districts, with patience enough to stand the mosquitoes. Then, if you fail, you will at least have gained a valuable test of your own capabilities. If you succeed, you may possibly build up a fortune.

That is the best that can be said ; but in any case I do not think that Americans will be the ones to build up Brazil. They will come here, as you and I come, to study nature, admire the woods and rivers, enjoy the wild life ; they will come as merchants to the cities ; but they will not often come as planters, because our own country is as rich, and is better governed than this one. Some time Brazil will give up her senseless colonization schemes, and open this rich land to the world, by taking off the burdens of export duties, and encouraging manufactures. Then the country will fill up, as ours has done, with European emigrants, from which a stronger and better race will spring. That is Brazil's hope for the future ; we, who write for the present generation, cannot be too careful how we encourage *poor* men to come here.

## CHAPTER VI.

### THE FOREST.

**B**UT what of the deep woods? Away to the southward there stretches a green labyrinth whereof no man knows the boundary; an undiscovered country, a region of dreams and mysteries. It must be three or four hundred miles at least from here to the open lands of Central Brazil; and this is only a fragment of the whole. To the east, to the north beyond the Amazons, to the west fifteen hundred miles, there are trees, and trees, close together, mingling their boughs, netted with vines, a vegetable infinity.

From Pizarro's time until now there have been expeditions into the forest; scores of authors have written about it in nearly every civilized language. But after all, the tangle has only been discovered at many different points; it has never been explored. Your careful writer will generalize with a qualifying phrase: "So far as we know" the forest is so and so. I find high woods, for instance, on the Xingú along its western bank; I find similar woods on the eastern side of the Tapajós; and I infer that all the intervening space is like these two spots. In this case I have fair confirmation from the reports of Indians and fugitive slaves. But from other regions there are no reports at all; tracts as large as

New England are utterly unknown. However, we may safely suppose that the same climate, over the same low plain everywhere, will encourage a similar forest growth. Reasoning from this, and the knowledge that we have, we can tell pretty nearly the extent and limits of the great wood.

In general language we may say that it occupies the northern plain of South America. That is, part of Bolivia,

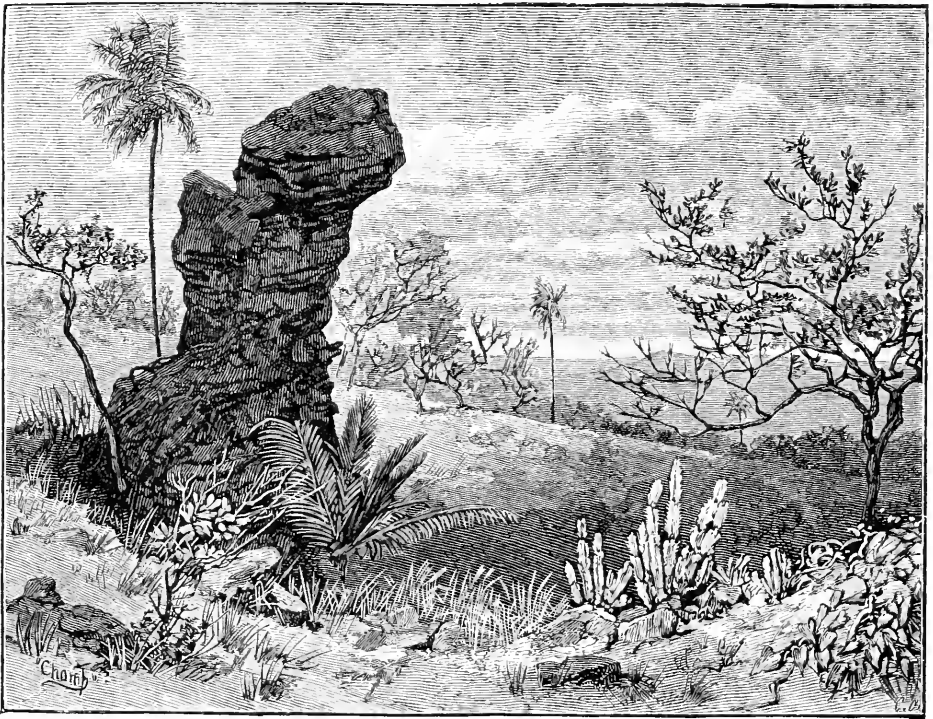


Forest Group.

Perú, Ecuador and Colombia east of the Andes; Southern Venezuela; Guiana; and all of Brazil north of lat.  $10^{\circ}$  S., and west of the River Parnahyba, with extensions as far as  $15^{\circ}$  or even  $20^{\circ}$  S. In other words, if you please, the connected basins of the Amazons and the Orinoco.

We note two things in the outset. First, the body of the

forest lies within ten degrees north or south of the equator, where rains are more or less abundant all through the year; second, it is higher and thicker and wider in the dripping west-region; toward the east it narrows off, and here, also, it is broken somewhat by more open tracts, sandy or stony *campos*. The largest of these campos are on the northern side of the Amazons, between the river and the Guiana Mountains. We have seen how the trade-wind is dried by these



Sandy Campos (Hill-sides).

mountains, so the rains are less abundant on their lee. To the south of the Amazons there are other campos, increasing in number and size until we reach the great open table-land of Central Brazil. Besides, there are the meadows of the Amazonian flood-plain, and more extensive ones on the Orinoco. It is not strictly correct, therefore, to speak of the forest as "unbroken." Only to the westward it is really a



continuous mass; a circle eleven hundred miles in diameter could be drawn within its limits.\*

I am driven, therefore, to this conclusion. The forest depends on the rains, as the rivers do. Forest and rivers owe their existence to the moist trade-winds blowing freely over this great plain, and meeting cold blasts from the west. The forest protects the rivers by preventing evaporation; it increases the rains by preventing radiation. The rivers nurse the forest, drain the ground, moisten the air. They are all joined together, dependent on the same causes, dependent on each other: the most abundant rains in the world, the greatest river, the largest forest.

The great cane-field is a clean-cut gap in solid green. All around the trees rise like a wall; where the cutting is recent we get a kind of section: a multitude of tall columns, so thickly set that you can hardly see the dark spaces within; and at the top a green roof, twenty feet, perhaps, out of the hundred. In six months' time the columns will be covered up with branches and matted vines, a splendid mantle; the clearing would be filled in too, smothered in second growth, if it were let alone. Warm tropical nature has no love for bare ground and smooth sward.

Back of the field we find a cart-path, like a tunnel; thick branches meet overhead, and almost conceal the entrance. The air strikes cool in our faces; coming out of the glare we can hardly see at first, so dark it is. Wait a moment, with your back to the sunlight; there are thick-woven branches in our way, and cord-like vines that we may trip against, and spiny palm-stems; our eyes must be accustomed to the shade before we can avoid them. Now go on, care-

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\* Wallace: Amazon and Rio Negro.

fully ; turn off from the path for a moment, and look about you.

You are aware of a maze, a web, what you will that is confusing to the eye and mind. There are tree-trunks, that you see ; and a multitude of vine-stems ; and a mist of scattered foliage, obscuring everything without concealing it. Near the ground there are not many leaves ; but overhead the boughs are woven thick together like a mat ; you can see the blue sky only in little patches ; stray beams reach the ground sometimes, but all around there is only the solemn, diffuse light. The eager leaves above will not let the sunshine pass them ; they crowd into every vacant space, drink greedily of the warm flood, push and strive for more of it. The trees do not get it all, either ; for over the branches clamber a multitude of vines, racing with the twigs, sending long shoots into the clear upper air. It is a rampant life up there on the forest roof.

I wonder if the height of the forest is owing to this ; if the straining to be topmost has resulted, after awhile, in a general modification of the forest species. I can suppose that they were herbs once, then shrubs, then lesser trees, before they were giants. Some of them grew sturdy and upright ; some that could not be trees had to get their light by climbing over the others. "It is interesting," says Mr. Bates, "to find that these climbing trees do not form any particular family. There is no distinct group of plants whose especial habit is to climb, but species of many and the most diverse families, the bulk of which are not climbers, seem to have been driven by circumstances to adopt this habit. There is even a climbing genus of palms." Whether the theory be correct or not, it is certain that there are comparatively few small plants in the forest, and the most of these are parasites among the branches.

At first you do not notice this, or any other single fact ; there is only that vague sense of bewilderment, and yet of beauty and fitness in it all. It is only after you have spent days and weeks here that you can reason on what you see ; when the forest is as familiar as home-fields ; when the trees and vines are tried friends. But suppose we have this familiarity, there are a hundred interesting things to note every day.

It is very different from a northern wood, and yet unlike the pictures that we have drawn, building up an ideal from green-houses and descriptions. Our conservatories are unnatural, because they bring together a great number of tropical plants from fifty different regions. All these species are remarkable for their large leaves, or singular forms, or brilliant flowers ; and they give a very strained idea of tropical nature ; a most degrading idea, to my mind ; you can spoil even plant-combinations by an excess of ornament.

There is massing of foliage and bloom in the tropics ; we have seen this on the lowland channels and about swamps ; but even there the splendor is all outside. Within a forest, and especially in the highland woods, there is no massing at all ; tree-trunks and branches, and vine-stems, form the main part of the picture ; leaves are only a spray thrown over them. The tropical foliage, such as we imagine it, is not at all prominent. There are palms, not very conspicuous, for the dwarf kinds commonly show but five or six leaves, and the tall ones have their tops in the maze above ; only in some places you will find the handsome stemless *Attaleas* growing abundantly. Broad-leaved plants are not common here ; a few grow over the ground, and now and then we see calla-like philodendrons on the tree-trunks ; but for the most part such species are confined to swamps and brooksides. In the thick forest one hardly ever finds a bright flower ; cer-

tain trees are splendid in their season with yellow, or purple, or white, but you see nothing of this from below. Strong colors always seek the sunshine.

But the forest is intensely tropical for all that. The great columns are draped and wreathed with vines; the branches are all bound together with them; the thick roof is a labyrinth of vine-stems and leaves. Not merely the puny ones that we know in the north; giants, with woody stems like the trunks themselves for bigness, clambering up one tall tree, rolling over half a dozen other ones, hanging in festoons from the boughs fifty yards away. You see them twisted in every conceivable shape, looped and knotted, curving from tree to tree; one can sit in these wooden hammocks and they will hardly sway. There are species with smooth stems and rough ones, and spiny; round, square, triangular, flat, gathered into bundles; and the strange, zigzag *Bauhenias* are like a staircase with raised edges. What the foliage is you may conjecture; it is so mingled with that of the hosts that you cannot tell one from the other as you stand on the ground; or there may be a dozen different vines clambering over one tree, branches and leaves and tendrils forming such a tangle that you despair of unravelling them. Among all these are the hundreds of cord-like air-roots, dark lines fifty or sixty feet straight up and down. Many of these are so small that you hardly notice them in the shadows; but they will bear a weight of fifty pounds. They come from parasites among the branches; after they have taken root they often grow into thick stems, about which half a dozen smaller ones may be twined. The *Apuhy*\* begins in this way, as a parasite, where the main

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\* *Ficus*, sp. var.

branches of a tree spread off from the trunk ; it sends down air-roots on all sides, to grow and strengthen until they are trees themselves ; they clasp their giant host, and choke it to death ; and the Judas-tree stands at length a giant in its place.

Of course, with all this tangle the forest is far thicker than our northern woods. It is much higher, too, than any except our pines ; fully a hundred feet in many places, and some of the great *Eriodendrons* and *Lecythes* rise to two hundred feet or more. For the rest, the trees resemble northern species ; only many of them have great buttresses around the roots, and a few are spiny. The astonishing feature is their variety. In a northern forest you find great tracts occupied by pines, or maples, or beeches ; or at most there are four or five species grouped together. Here, on an acre, you will hardly find half a dozen trees that are alike ; through a day's walk you may see two or three hundred. In a few places only you may find great numbers of *tauarís*, or *castanheiros*, or *saboneteiros* ; but never to the exclusion of other kinds.

How are the trees nourished ? The ground is sandy, as it is almost everywhere along the Amazons, and not very rich ; it is nearly bare above, for mould does not form in the tropics, except about swampy places. At the north the leaves fall together, and rot under the snow ; but here they drop one by one all through the year ; dry up, and are broken to dust, and so pass away in the air. Fallen logs and branches are eaten by insects ; there is nothing left to form a rich soil of. In fact, it is a mistake to suppose that all this rampant growth depends on any inherent fertility of the ground. The sun and the moist air make up for barren soil ; besides the rains there are the heavy dews, and the winds are

always soaked. The sand has no richness of its own, but it aids in the work by carrying rain to the thirsty roots; water does not collect on the surface; it sinks at once, and is evenly distributed to a great depth; and in this climate the ground has no chance to dry up.

Many plants get their nourishment from the air. Not only the delicate orchids; there are scores of other epiphytes; some of the vines, and trees even, depend more on the air than on the earth. Here is a *taperebá*\* tree lying across the road; it was cut, maybe, six months ago, but it is as green as ever, and has thrown off a dozen new branches. So it is on the plantations; you can get good crops from poor soil. I have seen a healthy-looking tobacco-plant growing out of a chink in a stone wall.

The path leads into the woods, a mile or more; young May comes here sometimes to get out timber. Beyond that, the hunters have penetrated a little way; for a mile or two more you will find old trails, all grown up, and only marked by the cut ends of branches and vines; and then the forest, untouched, omnipresent.

If you would know the mighty power of this desert, go deep into it. Note the direction by your compass if you have one; note where the sun lies; you cannot see it, but you may catch sight of the topmost boughs, lighted only on one side. Keep a straight line as nearly as you can; an absolutely straight one is impossible; you must pass by great tree-trunks; you must make detours where the thickets are too dense for your wood-knife. Go on an hour, a day, until the forest is familiar, until you learn to recognize its thousand forms. Go until you are hungry, and thirsty, and

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\* *Spondias lutea* ?

weary with the long fight ; until you know that you are insignificant because you feel it.

You do feel it ; more, even, than on the ocean. For at sea there is always the same horizon, a definite boundary to vision ; and in its very attempts to reach beyond it the imagination forms an ideal ocean, a limited immensity. The ship carries you on without any exertion of your own ; you know that you are moving, as you know that the earth moves ; but day by day there is the same sea and sky to give the lie to your reasoning. Alone in the forest, your insignificance is forced upon you. You keep your straight track, hour after hour ; and it is no easy journey. You must do battle for your right of way, cutting a narrow passage through hedge-like thickets, and mats of woody vines, and interlaced branches. Now, after a day of hard fighting, you lay yourself at the foot of some giant tree, and look up, up to where the boughs are all mingled together, and single leaves are indistinguishable ; where the fragments of blue sky seem hardly more distant than the tree-tops, as if you saw them through an inverted telescope. And then you gaze off through the vague net-work of leaves and tree-trunks and rope-like air-roots and twisted vines, until the vision is lost, you know not where, only you feel in your inmost soul that there is a mysterious, an unfathomable depth beyond ; tired and worn as you are, you know that you have only passed the borders of this infinity, where you could go on for weeks, months, and never reach the end ; you compare your own littleness with the littleness of a single tree which, standing alone, would be a beacon for miles around ; and you bow your head with fear and trembling.

Think, now. You are separated from the world, more than you would be in the deserts of Africa or Australia.

You are alone, utterly ; an army of men could not find you ; your dearest friend, your most hated foe could not track you ; the vultures would not reach your body if you died here. You could not find your own way out, but by the path you came over, or the noted direction.

Very few men will care to go far into the forest without companions. There is always a possible jaguar to fear ; and then one may get lost ; I have been, once or twice ; only for a few hours, but the sensation was not an enviable one.



In the Forest.

Some years ago a boy wandered off in these woods and was never heard of again ; the whole colony turned out and hunted for three days. The boy may have been killed by wild animals ; he may have died of hunger or thirst. Who can say ? There are such terrible possibilities in the word *lost*.

But we would go deeper into the mystery. We plan an excursion with the young Americans ; half a dozen are will-



ing to go for the hunting, or the fun, or the mere pleasure of going where nobody else has been. We engage two Indians to accompany us; each man carries a hammock and blanket, a sack of mandioca-meal, his wood-knife, and a gun if he has one; a calabash jug of water, also, for we cannot expect to find any, during the first day at least. Thus heavily laden, we leave the house at sunrise and file off through the cane-field, where the dew rattles off and soaks us all thoroughly. Once in the deep woods we seek for a surveying-line which was cut, seven or eight years ago, by some enterprising engineer. We find it with difficulty, and follow it by the old cuts; it leads directly south, no one in the party knows how far; but the end of the line will mark the farthest limit to which any white man has attained. Of course, we resolve to outdo the engineer, and gather his glory to ourselves.

We march slowly; our water-jugs are clumsy and burdensome, and the undergrowth is very thick. Our Indians march ahead, hewing right and left with their wood-knives, a vine here and a branch there; we follow in single file, dodging about tree-trunks, clambering over logs, tripping now and then against the vine-stems, going deeper and deeper into the solitude. Once or twice a cotia crosses the path, or a deer; for the rest there is not a sign of life; in the thick woods you do not often notice a bird, except in the early morning.

The brown guides are almost as ignorant of the ground as we are. None of the Panéma Indians have ever ventured far into the forest. They wander three or four miles back from the bluff, hunting, or looking for *piquiá*-fruits\* in their

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\* *Caryocar butyrosu*m?

season. This piquiá is a favorite dish. The fruit is contained in a thick shell ; it is separated from this, and boiled, and the thin oily pulp is scraped off from the hard nut within, as we eat green corn. "Not much more palatable than a raw potato," Mr. Bates thought ; but most people like them well, and they are very nourishing. Often we have seen them on the tables of our colonists, a steaming-hot panful, deliciously fragrant. A sweet oil is extracted from the fruit ; and they make ink of the outer shells, rich in gallic acid. The Indians are very fond of piquiás ; as we march, our men are taking mental note of the trees that we pass. Forest monarchs, these are ; the branches, contrary to the rule of forest-trees, are spreading and rough, like an oak, but vastly larger than any oak I ever saw.

Of other forest-fruits there are not many ; a Brazil-nut tree now and then, or a *janitá*, with little sour yellow berries. The Indians are quick to see these forest treasures. Both of them are clever woodsmen : will tell you the name of almost any tree, and its uses ; whether the timber be good or bad ; what will last as uprights in the ground, and what can be used for beams and rafters. When they are in doubt of a wood, they hack the bark a little, and smell of it, or taste it ; almost an unfailing test.

The man Theodoro is a young fellow, brawny-armed, and good-natured, as strong men are apt to be. The other, João, is older ; a little, silent, wrinkled figure, but with the more endurance of the two, I fancy. He has brought his little boy with him ; nine-year-old Graciliano must be taking his first lesson in woodcraft. The little fellow marches along, barefooted, with a water-jug on his head ; noticing everything, but quite silent. He has a shirt and trousers in the civilized fashion ; but we never see him with the two

on together ; one or the other garment is always wound about the water-jug, with picturesque effect.

By and by a shower comes up ; we stop under a great tree and improve the time to eat our breakfast. One could camp very comfortably between these roots ; *sapopemas* the Indians call them, great flat buttresses spreading out on every side for two or three yards, and rising against the trunk to double that height. I do not know what species this is ; a *samauma*,\* very likely, but many of the forest-trees have buttresses, small or large ; supports to keep the tree from falling over. Sometimes the Indians cut out portions of a sapopema and use them for thick planks ; in the forest a hut is often built against one of these trees, with the buttressed roots for sides.

As we proceed the hunters are looking out for our dinner ; not very successfully, for the whole afternoon brings us only a single partridge-like bird. We trudge on, wearily enough by this time, and soaked with the wet leaves, always through the same tangle of vines and undergrowth. At four o'clock we halt for the night ; our hunters go out to try for better luck, and the rest of us build a fire and swing the hammocks to friendly saplings ; palm-leaves for thatch there are none ; we form a rough shelter of boughs and trust that it will not rain.

Graciliano pulls my sleeve gently, "*Olhe ! Macaquinho !*" he whispers (Look there ! a little monkey !) ; and sure enough we see not one merely, but half a dozen peering down through the branches a hundred yards away. Some one runs after them, while our brown imp fairly dances with excitement. A successful shot brings down one : poor thing,

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\* *Eriodendron samauma*.

it is a sad penalty for its curiosity. The others scamper off through the tree-tops, with flying leaps of twenty feet or more. Presently the explorers return with one more monkey; some one objects faintly that these are not game, but hunger outweighs all other considerations. The monkeys go over the fire with the skin on, after the Indian fashion, and are not bad eating when one is hungry. It is well to note that these, and other forest animals, should be cleaned as soon as they are killed; otherwise the flesh may savor too rankly of the woods.

One objection we find to our bits of broiled monkey; there are not enough of them. However, we manage to eke out the repast with mandioca-meal; then we turn into our hammocks and light fragrant cigarettes. There are no mosquitoes here; the air is pure and cool; one could fare worse we think. Little Graciliano has no hammock; his father makes him a bed, or stage of sticks, like a bench, and the child lies down about as comfortably, you think, as one could on a pile of door-knobs. He goes to sleep immediately, having donned both shirt and trousers by way of covering. We, in the hammocks, will shiver before morning, with our blankets wrapped tightly around us.

Branches overhead are just gilded with the last glow: fine-cut, misty leaves of myrtles and acacias. Humboldt, I think, was the first to notice the peculiar effect of these pinnate leaves, a striking feature of the tropical forests. Of these and other trees there are a score of kinds about our encampment; a splendid grove if it were anywhere else. This one, to which my hammock is tied, is a *jutahy*,\* strong durable timber, but too hard for most purposes. The oval, brown fruits

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\* Sometimes *jutahy*: *Hymenœæ*, sp. var.

are scattered on the ground ; hard shells, with a sweet, yellow meal enclosing the seeds. A gum-like copal exudes from the trunk ; the Indians use this *jetahyseca* for varnishing their clay pots and crockery, and to burn the pottery a hot fire is made of jetahy bark. This smaller tree is an *acauba*,\* wild cacáo, and possible parent of the cultivated kind ; the others are *louros*,† *piranhaubas*, *cotiterubás*, and so on through a score of useful and useless kinds with sonorous names. For the rest, I know nothing of the scientific names, or whether they are named at all ; the botanists will be finding new ones for a hundred years.

Night draws on apace ; the fire-light dances over tree-trunks and branches. It is very quiet here in the deep woods. Out on the open lands, and near the villages, there is the ringing concert of insect-life, and the weeping night-birds ; around the varzea lakes there are croaking frogs and chirping crickets, and fish leaping about in the shallows. But we hear nothing of this about our camp ; there is no sign of life, except the weird moths flitting about our fire, and once or twice the rustle of some animal in the thickets ; a deer, maybe, that has come to the light. We lie awake for a long time, as one will at a first camp, watching the falling embers and musing vaguely. What a tiny spot our camp is in the great woods !

In the morning there is the same silence ; no hubbub and flutter of birds to welcome the sun. Once or twice only, a pair of macaws go flying over our heads, startling us with a great scream as if they were close to our ears. So it is through the day ; the few sounds are so abrupt and strange that they only make the after-silence more impressive. If

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\* *Theobroma*, sp.† *Cryptocarpa*, sp.

you step on a twig the alarm-bird sounds his three or four shrill notes, each one in a lower key than the last ; now and then an *inambú*\* partridge wails in the thickets, and sometimes we hear that long, mournful whistle of the lost soul-bird, as of one crying from the abyss. Rarely you see a bird passing under the boughs, and where the shade is darkest, silent-winged brown butterflies flit along the ground. But in the gloom these things hardly seem alive ; they are ghostly forms, without breath, a part of the silence.

The day's march is a very tiresome one ; we are continually getting off the survey line and only finding it again after long delays. Our calabashes are nearly empty ; they are most awkward things to carry, for we can only hold them by hooking two fingers into the hole that serves as a mouth. Two or three have been upset and the water spilled. João, who has been thus far, declares that there is a pool ahead, but we find only a dry bed of mud with tapir-tracks all over it. Such pools are met with at long intervals, but most of them dry up at the end of the rainy season.

By two o'clock we reach the end of the survey line, where great letters are carved on two large trees. Here we call a council of war. We have been on short allowance of water all day and there is hardly a quart left ; it will take us, at least, ten hours to return, for even when a path has been cut, it is difficult to make more than two miles an hour through the undergrowth. However, we resolve to camp here ; two of the men volunteer to explore for water with João ; and the rest of the party are tired enough to lounge in their hammocks. We are swarming with little black ticks, and dirty and perspiring as only a forest march can make us. How

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\* *Crypturus*, sp.

we long for the evening bath at Panéma ! But, being philosophical, we content ourselves with a dry rub.

Theodoro returns from a hunting tour and declares that he has shot at a tapir ; an encouraging sign, for these animals are never seen far from a watercourse or pool. Toward night our exploring party come in ; they report a dry watercourse below, with signs of water ; so we resolve to push on in the morning.

We have breakfasted on mandioca-meal, and for dinner our hunters have brought only a monkey and two birds ; small show for eight hungry stomachs. One of the birds is a *mutum*, as large as a hen ; the other is a splendid hyacinthine macaw, rare treasure for ornithologists, but the Indians have pulled out every tail-feather, to our great disgust. The bird, being an old one, is about as palatable as leather, but what flesh it has we dispose of, and wash down our scanty meal with the last drops of water. The mosquitoes are thick enough at this place.

Toward morning a light rain comes on ; we toss and soak until daylight, a sorry crowd. Not a drop of water to drink, much less to wash in, and only a handful of mandioca-meal to whet our ravenous appetites. Of course we are thirsty ; grow more so as we march, until our throats are parched and we can hardly speak. By and by João finds some water-vines ; each man cuts a yard of the stem in haste and holds it upside down over his open mouth. A few spoonfuls only he gets, and that is rather bitter ; but our regret is that there are so few of the vines. There are other kinds that are full of a running stream ; you must cut your yard of water above, and then below, for if you cut first below, the stream will run beyond your reach before you can hack the vine through again.\*

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\* Water is obtained also from the overground-roots of the forest *imbauba*, *Cecropia*.

Down a long slope now, until we reach a dry flat with palm-trees and matted vines. We follow this to the south; there are marks of a dry watercourse, and the trees are such as grow in wet places. At length, to our great joy, we find a little muddy pool; the tapirs must have been wallowing here overnight, for their tracks are fresh all around the edge; but we are not dainty; such long draughts we take, and think it delicious, too, though you cannot see half an inch into the mixture. We fill our calabashes, for there is no telling what we may find ahead; bathe, of course, and then follow on down the valley. Breakfast is out of the question; we have enough to think of to provide for our dinner.

The flat is narrowed now to a valley, not more than a hundred yards across, and matted with vines and saplings, as you have seen wild grape-vines draped over a tree. We have three of our strongest men ahead, cutting a path; but it takes us two hours to pass a mile of this hedge. Once we stumble into a nest of stinging *taixi*\* ants, like red-hot needles. After this mile the flat widens out again, and is covered with noble *nauasi*-palms†, with no undergrowth at all, so that we can walk freely between the stems. We go on in this way six or eight miles more, before we reach another pool. Near this we go into camp and send out an exploring party as before.

But alas! The hunters bring not even a bird. We sup disconsolately on mandioca-meal, and a little tea which some thoughtful one has in his pack, steeping this in a tin cup and drinking it without sugar. Then we hold another council. It is agreed that there are signs of game in abundance, but we have lost it in our eagerness for exploration.

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\* These ants live only on the *taixi* tree; they are very pugnacious.

† Attalea.



The majority are in favor of exploring the flat, which promises to lead to a stream, and so perhaps to the River Curuá ;\* but we yield to a minority who plead engagements at home. It is resolved to remain here for one day, to hunt and explore as far to the south as we can, and then to return, in two marches, by our old route. It is raining again by this time, but we have a good hut ; the great leaves of the uauasú make capital thatch, as dry as shingles ; moreover, we have bathed, and if the mosquitoes are numerous we have not the added torture of ticks and red mites. So we go to sleep and forget that we are starving on a thin allowance of mandioca.

In the morning we discuss the last of this, and of the tea ; the hunters hurry off, and two or three of us start to explore the flat. We find one pool after another now, and at length a sluggish stream with a general course to the southeast. It is agreed that this must be a tributary of the Curuá, but whether our conjecture is right or not some future explorer must say. We do not care to go far ; there are shots behind us, and one of our own party has shot a brace of great *coatá* monkeys. So we hurry back with a certainty of breakfast, and presently meet another party who are lugging a red deer into camp, with a third monkey and two land-tortoises ; whereat we shout and rub our stomachs approvingly.

Close by the camp we hear C. calling us loudly ; he was coming to the pool for water, when he was aware of a great red panther standing right in his path. C. had only his wood-knife ; he made a rush at the beast to scare it, but it would not be scared ; squatting close to the ground, it lashed its sides with its tail and eyed C. in a very ugly manner.

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\* The Curuá de Santarem, so called to distinguish it from the Curuá d'Alenquer, which flows into the Amazons from the north.

Our friend was about to retreat when he heard our party coming up. The panther heard us too, and apparently found himself outmatched, for he turned tail ignobly and ran off into the forest. One or two of the men gave chase, without success ; and C. was the hero of the hour.

P. has had his adventure also. He was watching at the pool with his gun for an hour or two, and then fell fast asleep, sitting on a log ; presently, opening his eyes, he saw a deer standing about ten feet away from him, and staring in evident surprise. The deer made off when P. moved, but a shoulder shot brought him down neatly, and before we return P. has a side over the fire. We make high feast for the rest of the day ; vote that forest-life is delightful, and have half a mind to push on after all. C.'s rencontre with the panther brings up a host of anecdotes about the various species. These red ones (*Felis concolor*), the same that is found in North America, are much smaller and less feared than the jaguar (*F. onça*) and black tiger. Of these there are a dozen bloody stories ; one man tells how a boat-builder on the Tapajós was attacked from behind as he stood over his work ; a blow from the great paw laid him senseless, and he never spoke thereafter. Another story, better authenticated, is of a Panéma Indian, who was killed only two years ago ; he went to hunt in the woods, and never returned ; a search revealed his body, mangled fearfully, and with his empty gun lying near. It is conjectured that he shot at a jaguar and perhaps wounded it, but was killed in the subsequent struggle. Several of the young men have killed red panthers like this one that C. met ; the general verdict is, that they are cowardly unless badly hurt.

Hunters speak of at least eight species of *Felidæ* in these parts. The smallest is a gray wild-cat (*gato do mato*), prob-

ably the *F. jaguarondi*, or an allied species. Next there is a small spotted species, which may be *F. Worwickii*; then a larger ocelot, or perhaps two or three—what species it is impossible to say in the confusion. All these small spotted kinds are called *maracajás*; they are only troublesome by robbing poultry-houses, as foxes do at home. The red *F. concolor* is common everywhere; by all accounts it extends from Canada to Patagonia, but there are varieties which are distinguished by the Indians, and have sometimes been described as distinct. The common name on the Amazons is *onça vermelha*, or, in the *lingua geral*, *suaçu-rana*, false deer, because it looks like a deer in the forest. Of the larger kinds there are three, well defined. *F. onça*, the jaguar, belongs properly in the lowlands, though it is frequently seen about the edges of the terra firme. This is the *onça par excellence*; but the Indians have their special name, *jauareté pacova-sororoca*—*onça* of the wild plantains (a common plant of the river banks). The other spotted kind is never seen on the lowlands, and it is quite different in form and habits from the *F. onça*. Moreover, it is readily distinguished by its markings; the *onça* has rings or roses of black on a light ground; this one has small black spots, running into stripes on the back, but never gathered into rings. I believe there can be no doubt that the two are distinct, and that the highland species is undescribed; it does indeed approach the *F. Hernandezi*, Gray,\* from Mazatlan.

Variety or species, our highland *onça* is not connected with its cousin by any gradation; and the Indians always distinguish it as the *uríaudra*, or dog *onça* (*onça cachorro*).

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\* Figured in the Proceedings of the Zoölogical Society of London, with a handsome colored plate; but the markings are much like those of *F. onça*, and it has since been regarded as a variety of that species.

For my part I would trust an Indian, in such a question, quite as readily as an anatomist. The black tiger, largest and fiercest of all, has been regarded as a melanic variety of the jaguar, but the Indians laugh at that idea. The black species, they say, belongs only on the terra firme, like the uriauara; the black mother always has black cubs; the animal attains a larger size, and is feared far more than the most terrible jaguar. Finally, the body is thicker and heavier in proportion, and the Indians distinguish the cry of this species from that of any other. For the present, I prefer to believe that they are right, and that *F. nigra* is a valid species.\*

We see no more onças, though their tracks are fresh about the water. Clearly, the abundance of game here is owing to the pool, where forest animals must come to drink; and here in the deep forest, they have never been hunted. We, being the first comers, have more than we can well dispose of; all the afternoon the men are smoke-drying the meat to carry home; so prepared, it will keep for two or three days. The land-tortoises must go alive; in the meanwhile they are hanging to branches around, each one tied with a thong of bark about its shell.

I have been cleaning the skeleton of a deer, for my collection. The Indians, too, are enriching themselves; they have found a *tauari*† tree near by, and are tearing off great strips of the bark and making it into cigarette-papers. The hard outer portion is removed from the strips; then the ends are hammered against a tree-trunk until the fibres turn over

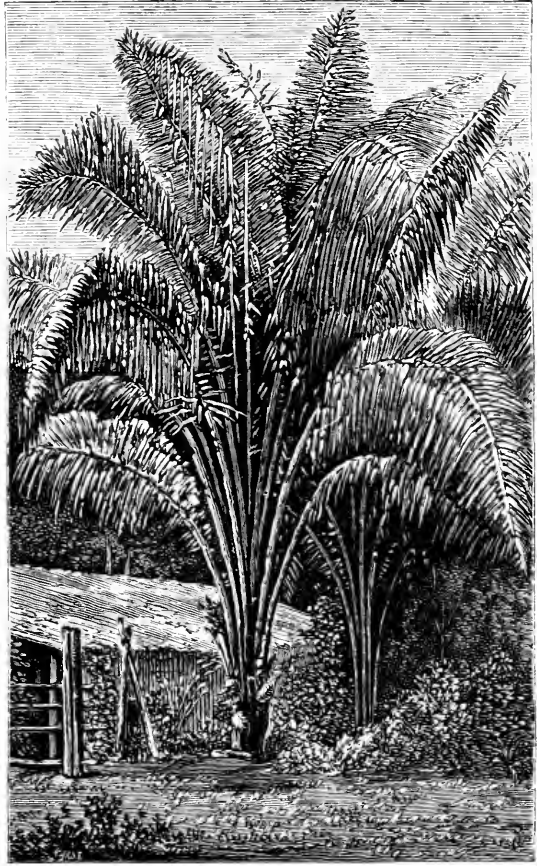
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\* I regret that my specimens were lost. I have no desire to create species, but the notes I give have been carefully gathered, from at least fifty hunters, and compared with my own observations on the skins.

† *Couratari gujanensis*, or some allied species.

and separate into thin leaves, like brown paper. These must be boiled to extract the bitter sap, and carefully dried ; then they are cut off as required. Many persons prefer this tauari paper to any other for smoking. When burning, it has a distinctly sweet flavor and no disagreeable smoke.

Altogether, we are quite loaded down when we leave camp in the morning. The guides have woven deep *pannaci* baskets of palm-leaves ; they are strapped like knapsacks to our shoulders, and further supported with a band around the forehead. So we trudge home wearily ; taking nearly two days with the march before we come out by the great Inajá palm at the civilized end of the forest-path. I suppose that our farthest point was less than thirty miles from the bluff, or forty from Santarem ; but no one has been so far before ; only to the south-east twenty or thirty miles, on the Rio Curuá, there is a colony of fugitive slaves, and white traders may have ascended that river.



Inajá Palms.

Young May is building a shed, or a mill-house, or what not ; he explores the forest every day for timber. There are trees, and plenty of them, close about the house, but they are

not those that he wants ; he must have *pdo d'arco*,\* *jacarandá*,† *itauba*,‡ the hard, time-resisting woods that are proof against rot and insects. Building his shed with ordinary timber, he would have to rebuild it in a year. The damp air and soil will rot any but the best woods. The white ants and boring beetles would riddle other beams until they fell to pieces of their own weight ; for the uprights especially, only a few kinds will do, and these are scattered far and wide. A mile back from the clearing he may find the tree that he wants ; he cuts it in a half-day's hard work, for the wood is like iron ; cuts it again under the branches, and then drags the log out painfully with his ox-team. After that he must hew it into the shape required, for the single saw-mill of the colony is too far away to be of use to him. Altogether, his shed will cost him at least five times as much work as a similar one would in a pine forest ; to be sure, it is built of cabinet woods, and the unpainted frame will last fifty years.

This brings us to an important question : the value of the great forest as a timber-mart. People wonder—I have wondered myself—why the world has neglected it so long. The priest Acuña, writing in 1641, grew enthusiastic over his theme :

“ The trees of this river,” he says, “ are without number ; so high that they reach to the clouds, so thick that it causes astonishment ; a cedro that I measured myself was thirty palms in circuit. The most of them are good timbers, so you could desire no better ; for there are cedros, ceibas, pale wood, dark wood, and many others, recognized in these regions to be the best in the world for ships, which could be made here better and at less cost than anywhere else, finished and launched, without sending to Europe for anything except iron for the nails. For

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\* *Bignonia*, sp.

† Rosewood ; also a *Bignonia*.

‡ *Acrodictidium*, sp.

here, as I have said, are woods from which to choose ; here are cables as good as of hemp, made of the bark of certain trees, which will hold a ship in the heaviest gale ; here are pitch and tar ; here is oil, as well vegetable as from fish ; here is excellent oakum, which they call *embira*, for calking the ships ; here is cotton for the sails ; and here, finally, is a great multitude of people, so that nothing is wanting for as many ships as may be placed on the stocks.” \*

In 1876 the Brazilian Government sent a large collection of woods to the Philadelphia exposition, and they attracted a great deal of attention, even among the crowd of other things ; people were astonished at their variety and beauty. In truth, the collection embraced only a small part of the most valuable kinds ; on the Amazons alone there must be two or three hundred that would be worth exporting, besides the great host of valueless ones that make up the forest. But precisely here is the commercial difficulty. There are so many kinds that they will seldom pay the cutting.

Lumbermen deal in large quantities ; they want so many hundred thousand or million feet of a certain kind of wood. Now, suppose I should agree to furnish a million feet of *páo d'arco* ; I would be baffled in the outset, because the trees are few and far between ; I must cut a road for every one, and then in a square mile of timber-land I would get no more than fifty or a hundred logs. By rare good luck I may find an exceptional spot where the species that I am searching for exists in quantity, but such tracts are limited and often far from the river-banks, where they are valueless, at present.

The natural remedy is the formation of large, central store-yards, where the timber can be sorted and shipped. Suppose that a grade of prices were set for the different kinds of logs, so much per foot for each, in large or small quantity.

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\* Nuevo descubrimiento del gran Rio de las Amazonas, xxvi.

I imagine that the supply would come in slowly at first, but it would increase as people saw the advantages of a fixed price; men would enter into the business; government land would be taken up, and so after a while there would be a large and active timber-trade all through the valley.

In any case, these hard woods cannot take the place of pine and other soft kinds; and even if they could, the Amazonian forests could never compete with our northern ones for cheap timber. Lumbermen will tell you that it does not always pay to cut pine forest. The trees must be on hill-sides, generally, and not far from a river, so that they can be "slipped" down over the snow and floated to market. Here, under the tropics, there is no snow. Suppose you get your log to the river; it will not float unless it be a cedro or some one of the few other light kinds, and most of these are good for nothing.\*

But if the world does not want an unlimited supply of cabinet woods, it does want them in pretty large quantities, and will pay well for them. If it is worth while to cut mahogany and rosewood in Honduras and the West Indies, it will be worth while to cut fifty kinds on the Amazons; only one must choose the ground, near river-banks and where the best trees are abundant. One often hears it said that good timbers are never found near the river; but this is a great mistake. The *varzea* species are generally soft and worthless, and these are the ones that are seen along the main Amazons. But there are plenty of deep side-channels and tributaries that run along the *terra firme* and by the richest timber-lands; schooners could ascend from Pará in a few

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\* It is only fair to say that many of these facts were suggested to me by Maj. O. C. James, of Rio de Janeiro, a sharp observer and one thoroughly acquainted with the pros and cons of Brazilian commerce.



days and take loads from the banks. I know of such places along the Tapajós, where the splendid *maracoatiara*\* grows quite commonly almost at the water's edge; and with it there are a dozen other woods, only less beautiful.

Most of the forest is government land; certain valuable portions belong to the Amazon Steamboat Company, which would be glad enough to dispose of the timber at a reasonable profit. As for the government, it has never done anything for the timber trade; on the contrary, there is the suicidal export tax that burdens every industry in Brazil. At present, I believe, the duty at Pará is fourteen per cent. *ad valorem*. If the logs are brought from the Upper Brazilian Amazons, they must pay an additional tax on passing from one province to the other; but if they come from Peru, they pay no tax at all, because the river is now a free highway. So far as I know, the value of this duty has never reached one hundred dollars in any single year; commonly, it does not figure at all in the custom-house reports. If it has any effect, it is to frighten people away from the timber-trade; the difficulties are great enough, as we have seen; and this extra burden would make a sad drain on the possible profits.

Possibly the tax might be removed or modified, if a determined effort were made against it. At any rate, I am inclined to think that an Amazonian timber company might succeed very well if it were properly managed. The natural drawbacks are probably less than in other tropical countries, and the forest land is very cheap. But in this and every other Brazilian project one cannot start with too much care. The ground must be carefully examined by experi-

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\* Corruption of *muirá-koatiára*; literally, striped wood; a handsome, dark timber, hardly inferior to leopard-wood, to which it seems to be allied.

enced men ; the scarcity of labor must be considered, and the hundred stumbling-blocks that will be thrown in the way by stupid government officials and jealous merchants. Then the enterprise, once started, must be backed by a liberal supply of money and unlimited perseverance.

Perhaps the Jesuit's dream will be realized some day ; for surely he was right when he said that no other country was so well fitted for ship-building. But it is not simply that iron for nails and copper for sheathing must be imported, with fifty other things ; the " great multitude of people " has melted away under Portuguese mismanagement and tyranny ; there are no skilled workmen ; the scattered valley population is ignorant and unprogressive, and in the south the coffee-trade absorbs all attention.

We stand here in the forest and wonder at the riches about us : unavailable riches—as useless as Crusoe's money. But they are grandly beautiful ; you and I are richer for the great trees, if the world at large is not.

## CHAPTER VII.

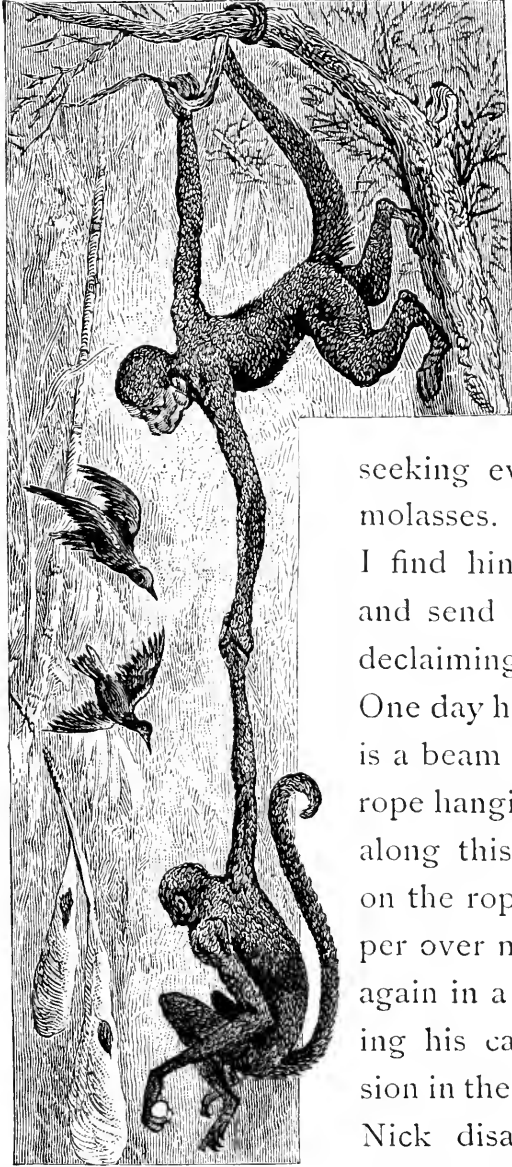
### ZOÖLOGICAL GLEANINGS.

AT Diamantina and Taperinha, all our mornings are spent in the woods and clearings, gathering new treasures for our collections and great store of notes on the forest animals and their habits. Mr. Platt has fitted up a laboratory in his great kitchen, with a dry-goods box for a table, and a hanging shelf to keep our collections from the ants. Here we sit in the hot hours, working over the treasures that the morning has given us, taking notes, labelling, and packing all away securely from the damp air.

Mrs. Platt is hospitable, and willing to let us use her kitchen; but one trial we have brought her—our pet monkey, Nick. It is a little *Cebus* that I bought one day in Santarem, and brought home on horseback; the monkey attracted some attention in the street by climbing to the top of my Madras hat, and sitting there like a crest to a helmet, chattering, meanwhile, in a tremendous flow of monkey-oratory. Arrived at Platt's house, Nick was tied to a beam; he got loose the very next day, and proceeded to explore the house and all its furniture; ran, at length, into the box-pantry, and uncovered all the dishes until he found a cup of molasses, from which he helped himself liberally. Mrs.

Platt remonstrated with a switch, and Nick retired to a beam above, licking his fingers.

After that, there is no ruling him. We tie him every



Spider Monkeys.

day, but he always manages to get loose, or some mischievous child sets him free; from one end of the house to the other he runs, with the cord dragging behind him; upsetting boxes and cups, peering into the looking-glass, teasing the dog,

seeking everywhere for his favorite molasses. He is fond of insects too. I find him thieving from my cases, and send him off with a boxed ear, declaiming loudly against my cruelty. One day he gets even with me. There is a beam over our work-table, and a rope hanging from it. Nick runs slyly along this beam, lets himself down on the rope, and snatches a grasshopper over my shoulder; then he is off again in a trice, grinning and exhibiting his capture, and chattering derision in the most heart-rending manner. Nick disappears shortly after this.

Whether he is lost, or whether he has run away to escape the dreaded morning wash, or whether he is a victim to Mrs. Platt's housekeeping, we never learn. But thereafter we buy no more monkeys. There is another

one in the house ; not a troublesome one, but a little helpless baby Coatá,\* only a month old. The mother was shot in the woods, and this little one was found clinging to her body when she fell. The little monkey is lank and ungainly, with long, black hair, and great, black, beseeching eyes that fill with tears when the orphan is aggrieved ; he is very like a human baby in his actions, sucking his fingers or playing with chips lazily ; hardly able to crawl around, but clinging to everything with his strong prehensile tail. He moans softly when we caress him, and cries like a child when we go away. Poor thing, he misses Nick sadly ; our mischief-loving cebus liked nothing better than to cuddle or caress the coatá ; a funny sight, for Nick was hardly half as large as this overgrown infant.

Older coatás are most affectionate pets. At one of the American houses we find a full-grown one, which is kept tied to a tree before the door ; it always greets you by going through a series of sprawling gymnastic exercises, hanging by one or another long arm, or often by its tail, crooning and shaking its head to attract attention ; then, when you come within grasping distance, it embraces you tenderly around the neck, as an affectionate child might.

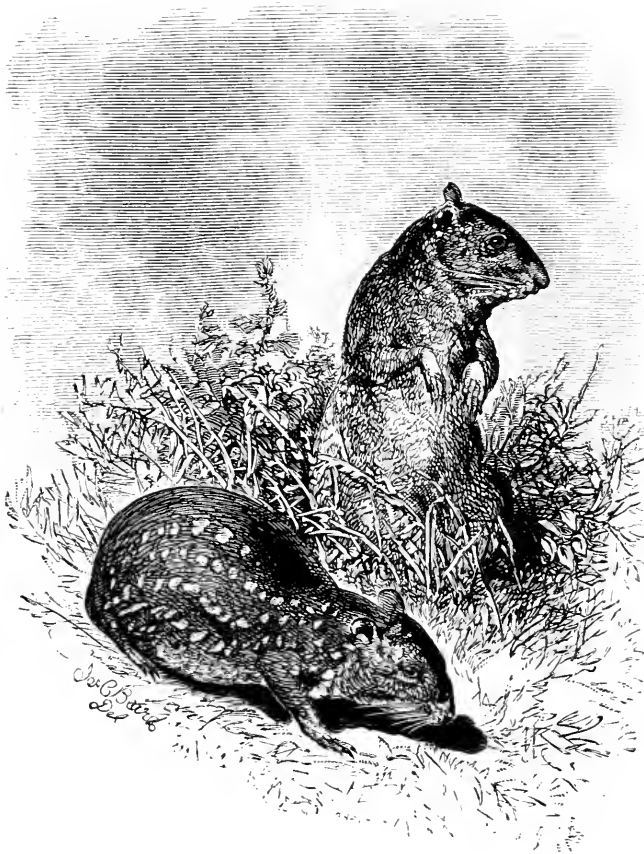
Our monkey's cousins are in the woods ; now and then we see a *prego* or a coatá swinging among the trees ; and the hunters speak of ten or twelve kinds in this vicinity. Nearly all species go in bands—two or three, or a dozen ; they are travellers by nature ; I never heard of their frequenting a particular place, much less of having a settled habitation. Mrs. Monkey travels with the children on her back until they can go alone ; they all live on wild fruits,

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\* *Ateles*, sp.

and on insects which they catch cleverly with their hands. But it is not easy to observe their habits in the woods; they travel among the thick-leaved upper boughs, hardly ever approaching the ground; so that it is only by rare good luck that we catch a glimpse of them.

Of the other forest animals we see only three or four



Young Pacas.

here. The pretty red and white deer\* are as common as any, coming to feed in the great cane-field, where we sometimes find them. They are very curious. I remember a red deer that stood looking at me steadily while I approached within ten yards of her, before she bounded off to the woods. We find that the ven-

ison of these deer is inferior to that of our northern species. The pacas† are much better game. They are rodents, allied to our squirrels and rats, but very unlike them in appear-

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\* *Coassus rufus*, *C. nemorivagus*. There are other species of these straight-horned deer.

† *Cœlogenis paca*.

ance—heavy animals, two feet long when they are full-grown, and so fat that they can hardly run at all; however, they are very pretty, colored white and light brown, and spotted along the back something like a fawn. Properly, the pacas are nocturnal; if we find one by chance in the day-time, it goes blundering about among the trees, and we can easily catch it if the ground is open. Sometimes Platt shoots them with trap-guns, which they are sure to tumble against. The flesh is very tender and sweet, so the helpless pacas are hunted continually; they must increase very fast, or they would be much more rare about the settlements.

The agoutis, or *cotias*,\* as they are called here, are related to the pacas, but they are slender, running animals, in appearance not unlike a small, hornless deer. The common species is reddish. There is a black one farther up the Tapajós, besides the little *cotiúdia*, which is often kept for a pet. All the species live on fruits and roots; they make burrows in the ground as other rodents do, and are altogether plebeian and uninteresting. The flesh is eaten, but it is much inferior to that of the paca.

Rambling of a morning about one of the clearings, we find a sloth† crawling over the ground; a most unusual circumstance, for the creatures hardly ever leave their forest branches. It is not a handsome animal: a mass of coarse gray hair; sharp, hooked claws, and a little round bullet-head, something like a monkey's, if you can imagine a monkey-idiot. Your sloth is a thorough vegetable. He hangs himself on a branch by his pedal hooks, and in this upside-down repose he lives, or exists, all his days in a dead calm between eating and sleeping. He seeks another branch

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\* *Dasyprocta*, sp. var.† Probably *Bradypus tridactylus*.

when he must to find new food, but a snail's locomotion, or a turtle's, is rapid in comparison. This one on the ground is entirely out of place. He sprawls this way and that, stretches one leg forward, very, very slowly, hooks a stick and drags himself up to it; sinks exhausted after the mighty effort; stops to take a nap, may be, before he begins again. His utmost speed can hardly be more than five or six yards an hour. I can suppose, though, that he would move faster among the branches, where his normal inversion is not disturbed. Whatever brought him to the open ground is a mystery. All the sloths, I believe, live by preference on the cecropia leaves; *bicho da imbauba*, beast of the cecropia-tree, the Indians call them, and a lazy person sometimes catches the name. People eat the sloths when they can get nothing better; but the tigers must dislike them for some reason, or else they are protected by their hanging position on slender branches.\* Their only defensive weapons are the sharp claws, with which they can give an unpleasant dig: you would hardly say a blow. If you strike one, he will turn his stupid head around slowly, with a sleepy kind of expostulation, and then turn it back again and subside into repose. The sloths must have very tenacious lives; often it takes three or four charges of buckshot to make them quit their hold on the branches, and it is noticeable that they hardly bleed; the circulation is as sluggish as the muscular movement.

Our first collecting trips are rather disappointing. One looks for large and handsome species under the equator; but, instead of that, the most of our captures are small and inconspicuous. The forest seems bare of life in comparison

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\* Wallace says that the harpy eagles often attack them.



with woods and fields at home ; birds are not common ; except butterflies, you will hardly notice the insects, unless you are hunting for them. Only by rare chance one gets a glimpse of some larger animal—a deer, a paca, or possibly an ocelot. Anacondas and jaguars we do not see at all.

This paucity of animal life is more apparent than real. No doubt there are fewer insects and birds in an acre of this forest than in an equal space in a northern grove. But we must remember that our groves are only remnants of a continuous forest, which once covered all the Atlantic slope ; the animals that roamed over square miles are now restricted to acres ; the woods are crowded with life, as little islands are in a flood. Our untouched western and northern provinces are as deserted as these of the Amazons.

Many of our northern animals appear only during a part of the year ; birds migrate in winter, insects lie concealed as larvæ or pupæ. In June the whole world seems alive ; but in August nine-tenths of the crowd are out of sight. Animals come, so to speak, in flocks, and then disappear. But under the tropics there is nothing to produce this crowding ; the birds do not migrate ; insects come, one after another, all through the year ; rather more abundantly about the beginning and end of the dry season, but for the rest the months are very evenly balanced. Suppose there are ten thousand insects in a given space of ground ; during any one month, there may be one or two thousand of these flying about in the winged state ; but at the north, seven thousand of the ten thousand would be flying in June.

One more thing we must note in this distribution of animal life. Your forest species have not merely a horizontal range of so many acres or square miles ; most of them are arboreal, have a vertical range also, of ninety or a hundred

feet. Some kinds hardly approach the ground at all; they live on the forest-roof, hiding among the green leaves, or flying about in the sunshine. You and I, walking in the shade below, will see only stray ones that may have come down in some open place.

If most of the forest insects are rare, the ants and white ants are common enough to make up for them. The white ants work under shelter, build long passages, and dig tunnels; their mounds are common along the road, and every tree-trunk and branch has its covered way, often ending in a great, ball-shaped house. The material for all these works is formed in the bodies of the insects themselves: half-digested vegetable matter; the unceasing work of their lives is to devour dry wood, rubbish, mould, books, clothing, and then turn them into passages and dwellings. About houses they are great pests; a party of them will riddle the contents of a trunk in half a day.

Of the true ants there are scores of species, each with its own customs. The Indians have names for many of them; one black kind, the *tocandera*,\* is an inch and a quarter long. We often find the nests of these giants at the foot of some sapling; if we poke the holes with a stick, the ants come out buzzing like so many bees and stinging fiercely if they get a chance. The wound is almost as painful for the moment as that of a scorpion. Foraging ants we see now and then, and the strange leaf-carrying *Ecodoma*—terror of the farmers, for it often strips the mandioca-plants of their foliage. Fortunately, it is not very common about the American plantations.

As the rainy season sets in, our entomologizing trips are

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\* *Dinaponera grandis*.

more successful; on some days we bring in two or three hundred species of beetles, and perhaps as many more of other sub-orders.\*

There is a rare delight in this every-day life of a naturalist. In the morning we are up at sunrise, swallow a cup of coffee, and hurry off to the dewy woods with our nets and collecting-bottles. Along the paths we tread softly; peer under the leaves, search the brush-heaps for wood-eating beetles. A palm-tree, recently cut, is full of small species, boring into the central pith to suck the sweet juice. From a hollow in the stump we fish out great black weevils,† two inches long; take care that they do not clasp your fingers

\* Entomological friends may be interested in the following lists of beetles collected on different days. The lists are taken verbatim from my note-book:

December 17th.—Worked about eight hours with the beating-net.

Cerambycidæ...	1	species,	1	specimen.
Buprestidæ.....	12	"	14	"
Scarabæidæ.....	7	"	13	"
Lucanidæ.....	1	"	2	"
Cicindelidæ.....	1	"	1	"
Carabidæ.....	7	"	7	"
Elatridæ.....	6	"	6	"
Coccinellidæ....	7	"	13	"
Lampyridæ.....	10	"	13	"
Staphylinidæ....	4	"	4	"
Cleridæ.....	2	"	2	"
Mordellidæ.....	4	"	6	"
Erotylidæ.....	3	"	9	"
Chrysomelidæ....	104	"	171	"
Rhyncophora...	75	"	94	"
Various.....	31	"	38	"

In all.....275 " 394 "

The majority of these were small species.

January 28th.—Worked along a newly-cut road. Day cloudy.

Cerambycidæ..	23	species,	34	specimens.
Rhyncophora..	39	"	68	"

† Rhyncophora palmarum.

Chrysomelidæ. 25 species, 31 specimens.

Various..... 45 " 55 "

Total..... 132 " 188 "

Almost all of these were large and fine species.

January 29th.—Worked mostly along the new road.

Cerambycidæ.. 32 species, 43 specimens.

Rhyncophora.. 56 " 125 "

Buprestidæ.... 4 " 7 "

Lampyridæ.... 23 " 30 "

Tenebrionidæ. 11 " 17 "

Chrysomelidæ. 60 " 74 "

Staphylinidæ.. 11 " 11 "

Various..... 71 " 164 "

Total.....268 " 471 "

February 3d.—I have noted 41 species, 75 specimens, of the beautiful longicorn beetles, all collected in about five hours' work, after a rain; this is the largest number I ever obtained of that family in a single day's work. On several days I have noted from 80 to 95 species of Rhyncophora.

with their hooked legs, or they will give you a pinch to remember. We can find the larva of this palm-weevil in old stumps,—a white grub that bores through the sweet pith. Sometimes the Indians eat these or other white grubs, not from necessity, but as a luxury, as more civilized epicures delight in raw oysters. I never tried the grubs.

A gorgeous blue *Morpho* butterfly comes sailing down the road; its wings glance in the sunshine like a mirror. Catch it if you can by a clever throw of your net; but if you miss it, do not go racing after it; ten to one it will elude you, and you may trip over a root for your pains. The morphos fly in the morning. Later in the day you will find them balanced sleepily on low boughs; you can catch them with your fingers if you are still enough. This is a common species, hardly worth running after; there are others, *Morpho Hecuba* for example, that you may not see for months together. *Hecuba* expands eight or nine inches; its wings above are dark, with broad diagonal bands of pale blue; beneath, it is handsomely mottled with rich brown and white. All the morphos are marked beneath with subdued colors, and you will find that this is generally the case with forest butterflies. They are bright enough in the air, but in repose they sit with the wings folded, and then you will hardly notice them among the leaves.

This is only one instance among a thousand of natural concealment; in truth, you do not see a tenth of the life about you, because so few of the forms are conspicuous. There are interesting exceptions to this rule of coloring among the butterflies; certain quick-flying kinds expose their rich tints freely. Some, that sit with the wings extended, have the bright colors all beneath; a common species rests in this way on tree-trunks, with its wings flat against the bark; the

mottled upper surface is so like the gray around it, that you hardly notice the insect; but beneath, it is banded with bright blue and crimson.

Here is a felled tree by the roadside. An inexperienced collector will search over it in vain; your trained bug-hunter will walk behind him and pick off a score of beetles from the bark; large and beautiful species many of them,—“longicorns” and weevils, with soft brown and gray tints that harmonize wonderfully with the surface. They cling to the lower side of the log; the weevils drop to the ground if you approach, but the longicorns sit quite still, with their long antennæ and legs held close against the body; even the sharpest eyes may pass them over. I have ten years’ experience now, but I can never be sure that I have picked the last beetle from a log; often, when I am about to leave it, the net drawn along the under side will bring half a dozen new forms to my collecting bottles. It is curious to see how cleverly the forest insects conceal themselves. They hide at the bases of leaves, crawl under bark, make masks of sticks and rubbish; the spiders sit in their webs, with legs all drawn together, so that they look like fallen flower-buds or seeds; many make dens by drawing the leaves together. Beetles often feed on the under side of a pendent leaf, and you will never notice them without peering beneath.

But the forest itself is the best concealment. It is a vast shadow, deepening into blackness, or paled to gray and brown, but everywhere with little patches of intense light. You may not observe even brilliant colors here, because the eye is dazzled by these lights. Scarlet is least subject to this rule, from its strong contrast to the green leaves, but even a scarlet passion-flower will often escape notice. A curious instinct teaches the forest animals to remain per-

fectly quiet when they are alarmed, and it is wonderful how well they may be concealed in this way. I have often searched vainly for a trogon or thrush that had sounded an unguarded note ; it might be close by, and in plain sight but for the light-spots around it.

Every day we find examples of protective resemblances and mimetic forms : insects, especially, resemble leaves, sticks, what not ; mimic each other, and are thus protected from birds and toads. There are plenty of examples about Taperinha and Diamantina that are quite as wonderful as those described by Wallace and Darwin.

Here, along the shady forest-roads, are brown butterflies, lighting on the ground or on the lowest branches ; if we approach them quietly they turn their bodies so that the head is away from us, and the wings, folded over their backs, are foreshortened. In this position there is nothing left for the eye but a little brown streak, which we hardly notice on the dark ground. The beautiful *Hetairas* live also near the ground, and have this same habit, but they are better protected by their transparent wings, with a single bright spot at the angles. They keep to the darkest woods, flying feebly among the low herbs ; but it is impossible for the eye to follow even such slow movements ; the transparent wings give only the impression of a little quiver of sunlight through the branches.

There are green tree-toads sitting on the leaves, and gray ones on tree-trunks and lichen-covered rocks ; ugly green and gray lizards, too, that we will hardly notice as they sit on logs and stumps. Snakes are green, very often ; but in these woods their most effectual concealment lies in their forms, like vine-stems ; they twist about branches, species often as slender as a whip-cord, and no wonder that they

escape observation when the woods are full of vines, twining in precisely the same manner. Our sharp-eyed Indian guide may see one of these tree-snakes, and point it out to us; but peer as we will, we cannot distinguish the creature, though it may be hardly a yard away. The longitudinal stripes of many species aid in this concealment; the body slides away before our eyes, and apparently there is no movement at all until the tail slips out of sight.

In other, and more interesting protective forms, the animal resembles some particular object; a leaf, a bit of bark, a stick, and so on. One of the simplest of these imitations, but a very effective one, we find among certain "longhorn" beetles (*Lamiidæ*), long-bodied, cylindrical insects, almost always of dull gray or brown colors. Most of them are night-flyers; all day they cling to dried branches, each with its legs twisted close around a twig, and its antennæ laid down by its side. In this position they look very much like little short sticks, so that even our sharp entomological eyes will often be deceived. Those sharper entomologists, the birds, are deceived also; and so the helpless beetles are saved from destruction. Here in the Amazonian forest this imitation is especially effective, because a brush-heap is certain to have bits of vine-stems still clinging to the twigs. One lamian that we find has the middle-body and the bases of the wing-covers marked with dull green, banded and roughened to resemble a lichen; the front of the head is concave, and white, with a black spot in the middle, precisely like the broken end of a hollow stick; and the hinder end of the body is inclined and rough, like a twig broken diagonally. We have been searching over the brush-heap for half an hour, while this fellow is clinging to a projecting stick; at length I break off the stick, beetle and all,

and examine it closely; but the resemblance to a bit of rotten vine-stem is perfect; the legs twisted about the twig are precisely like rootlets, such as you see on many climbers. So I am about to throw the stick away, when the beetle is foolish enough to move, and so goes into our collecting bottle after all.

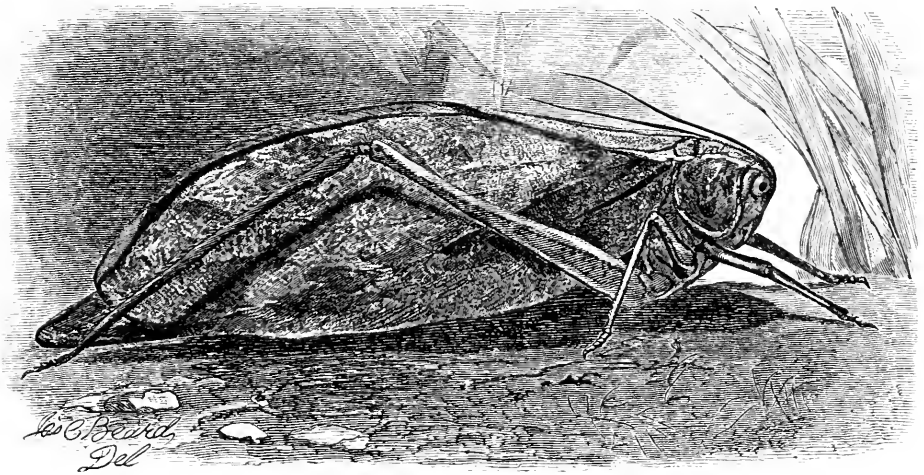
There is a very elongate lamian that clings to grass-stalks in the same manner; another is light gray and very rough, like the excrescences of the rough-barked tree on which it lives. One day, I find an *assaci* tree, of which the large blunt spines contain a very poisonous juice. I break off one of these spines (it is rather more than half an inch long) and carry it home, a five minutes' walk. There we turn it over and examine it for some time before we discover that there is a gray beetle clinging to it; it is a flat species, and very nearly as long as the spine itself, and precisely like it in color; while it remained still, there was nothing to distinguish it from the general surface, and only when my fingers come in contact with the beetle's body, I discover that it is alive.

There are leaf-butterflies here, only less perfect imitations than the *Kallima paralekta*, which Mr. Wallace described so graphically; two or three species of geometrid moths also imitate leaves, only in them the outspread wings, taken together, represent a small leaf. The upper wings on either side are pointed; a curved mark connects these two points across the body of the insect, representing the mid-rib, while faint radiating lines indicate the side-veins.

But we find the most wonderful leaf-imitators among the *Orthoptera*; grasshoppers, locusts, mantises, even roaches, are protected in this way. One large locust, or katydid, is so like a terminal leaf-bud just opening, that it would seem difficult to carry the imitation farther. The upper wings are



dark, shining green, like a pair of terminal leaves still folded together. From the shoulder to near the end of the wing a conspicuous vein marks the midrib; and smaller veins, branching and netting, are entirely like the venation of a leaf. The lower wings are long, and protrude beyond the others; an unusual feature among them; they are lighter green, pale leaves budding out from between the older ones. The green, slender hind-legs well represent a bent stalk, and the fore-legs



Leaf-insect, 1.

and body are the base of a bud. In this case the antennæ are very fine and inconspicuous.\*

Beating among the bushes one day, we discover a still more curious locust. This species closely resembles a half-eaten leaf; such an one as you may find on any bush where caterpillars and beetles have been feeding. The wings are green, broad, and wavy at the sides, like a leaf; the insect, as we find it, is resting head down on a twig, and the antennæ, folded together stiffly, take the place of a leaf-stalk. The midrib is arranged as in our other locust, but it is pale,

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\*I regret that a woodcut gives a very imperfect idea of this insect. It should have been represented as sitting on a twig, or branch.

as in a sickly leaf; the venation is plainly shown. On the upper part of the wing there is an irregular spot, circumscribed by veins, and brownish yellow in color; such a spot, in fact, as is left by leaf-mining larvæ. Variations in the color of this spot represent minute fungus-growths with wonderful accuracy, and there are other little fungus-dots scattered about the wing, as you will find them on a half-dried leaf. Finally, the ends of the wings are truncated, not squarely, but in a scalloped manner, as a leaf is cut off by caterpillars; the hind-legs are brown and shrivelled, looking like dried stalks. The more we examine our prize the more we marvel at its complete and really microscopical imitation; one would think that a less perfect resemblance would have served as well.\*

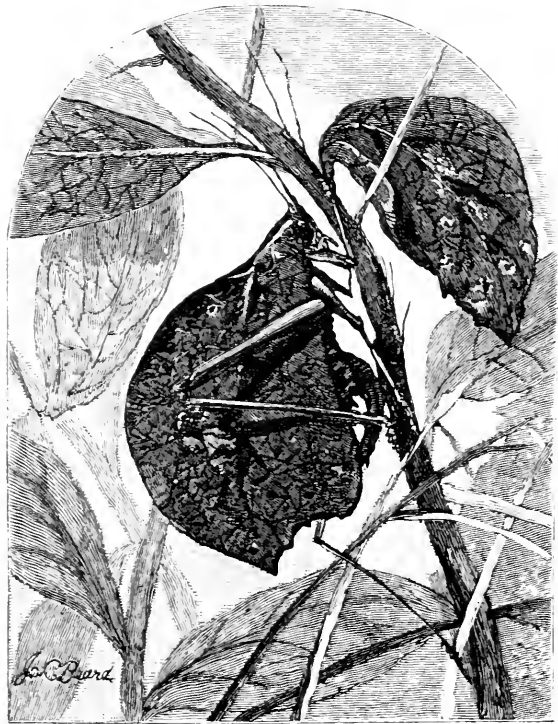
There are numbers of great "preying mantises" on the branches; *punha-mezas*, "set-the-tables," by their expressive Brazilian name. Many of these are leaf-insects also; one in particular resembles a wilted, dried-up bunch of leaves in the most curious manner. Its color is pale, yellowish brown. The upper wings, instead of being laid flat on the back, as in the other mantises, are raised over it, and curiously twisted and curled; we think at first that they are aborted. They perfectly represent dried, curled-up leaves, the midribs very prominent, as if seen from the lower side. The hind-body is flat, and from its color will represent another dried leaf; the head, and broad front legs, are so many more in the little bunch. This is a predaceous species, and no doubt the resemblance serves to conceal it from its prey as well as from its bird-enemies.

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\* There are several species of the same genus, some resembling green, and others dried leaves. By mistake the insect has been represented in the drawing with the head uppermost.

Some of the spiders, we find, are excellent imitators. The cylindrical species lie extended in their webs, with the legs stretched out, to look like a stick; round-bodied kinds draw their legs close and look like a leaf-bud, or a ball of their own silk entangled in the web. From Miss Muffet's time until now, the spiders frighten people away; but how shall we notice this one that sits on a leaf, all in a heap; the pink, three-lobed body appears just like a withered flower that might have fallen from the tree above; to the flies, no doubt, the deception is increased by the strong, sweet odor of the spider, like jasmine.\*

Mr. Bates long ago described the curious Heliconian butterflies and their mimics among other species. There are hundreds of such examples; when-



Leaf-insect. 2.

ever a group of insects is distasteful, for any reason, to the birds, there are always other insects that mimic these, and are thus protected, because the birds are deceived by their appearance, and will not touch them. One day, for example, I am watching what I suppose to be a *Stizus* wasp: a large black species, with deep purplish-black wings; it is running

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\* I regret that I cannot give the name of this, and other spiders that I speak of; but my collection (nearly six hundred species) has yet to be studied and described.

about among the grass-tufts, moving its antennæ rapidly, as is the fashion with these wasps, and I am curious to see what it will do. After awhile I discover that my supposed wasp is a grasshopper; a most remarkable one, indeed, for I never saw such a color before in a grasshopper; and the fussy movements are utterly unlike the slow sidlings of Orthoptera, or their quick leaps.

In the woods we are often attacked by swarms of little *Melipona* bees; they have no sting, but each one grasps hold of a hair, and pulls with all his might. They have a very strong, unpleasant odor, which probably makes them distasteful to birds; hence, they have no use for a sting. The meliponas are little, hairy insects, always daubed over with honey, or with some excretion, so that they have a very peculiar appearance. Two species, a black and a yellow one, are very common; both of these, and several less common kinds, are mimicked by little "longhorn" beetles, species of *Charis*. The form of the mimic is like that of the bee, and utterly unlike what we are accustomed to among the longhorns, or any other beetles; the wing-covers are short, so as to expose the membranous wings; the body is hairy, and even the tufted hind-legs of the bee are found also in the beetle. But what is still more singular, the sticky appearance of the bee is imitated by the beetle in a peculiar arrangement of white and dark hairs, and smooth surfaces that look moist at a little distance.

In the United States there are a few rare spiders that mimic ants. Here at Taperinha we find a good score of species of these spiders, aping the various kinds of ants very closely; even the odd, spiny wood-ant, *Cryptocerus*, furnishes a pattern, and there are spiders that mimic the wingless ichneumons. We find, after awhile, that the spiders prey on

ants, just as our spiders catch flies ; indeed, this fact has already been noted by other observers.

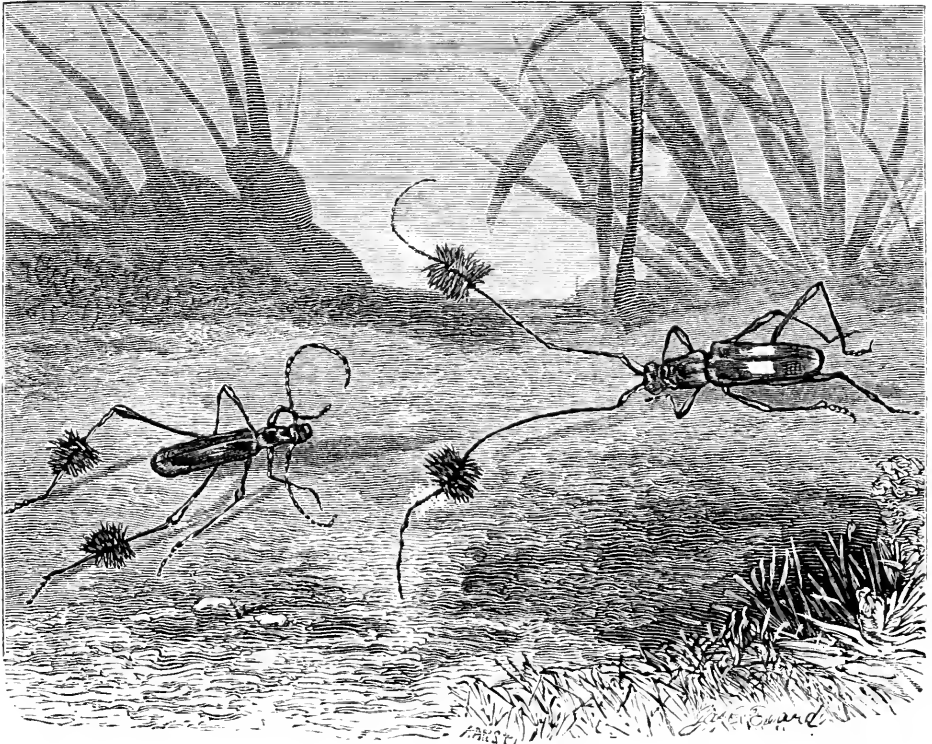
But we go a step beyond the books, when we discover not only that the spiders eat the ants, but that they eat the particular ants which they mimic. At all events, we verify this fact in a great number of cases, and we never find the spiders eating any but the mimicked species.

I do not like to hazard a theory on this case of mimicry. It is difficult to suppose that the quick-witted ants would be deceived, even by so close a resemblance ; and in any case it would seem that the spiders do not require such a disguise to capture slow-moving ants. Most birds will not eat ants ; it seems likely, therefore, that this is simply another example of protection ; the spider deceives its enemies, not its prey ; it mimics the particular species that it feeds on, because it is seen in that company when it is hunting, and among a host of similar forms it is likely to pass unnoticed.

In certain insects we observe a curious feature that may indicate another form of protection. A good many beetles, we find, are formed and colored so that the hinder end of the body is almost a counterpart of the head-end ; or, in some cases, the insect is apparently reversed, and the head seems to be the tail. These cases are especially marked among the cylindrical species, *Lamiidæ*, etc. Again, a number of the handsome "longhorn" beetles are remarkable for tufts of hairs, which the different kinds bear on their antennæ. We find two or three species, however, whose antennæ are plain, but there are similar hair-tufts on the hind-legs. Mr. Bates noticed these forms, and commented on their singularity. "It suggests curious reflections," he writes, "when we see an ornament like the feather of a grenadier's cap, situated on one part of the body in one species, and on a totally different

part in nearly allied ones." The effect of this change in the position of the ornaments is to invert the insect in appearance. The species that have these tufts behind are remarkable for their very long hind-legs; and these, held straight behind them, appear very much like antennæ.

Small moths (*Pyralidæ*, *Tortricidæ*, *Tinæidæ*,) sit on leaves, with their wings folded over their backs. In this



Longicorn Beetles.\*

position, many of the species resemble sticks, moss, bird-droppings, etc.; other kinds appear inverted, like the beetles. Certain narrow-winged kinds, when at rest, are very much longer than broad; and some of these have a singular habit

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\* The specimens are represented as somewhat magnified; they would be more properly represented on a log or tree, as they are very rarely seen upon the ground.

of spinning about on the leaf when alarmed, moving the body rapidly around the head as a pivot. One genus that has this habit, is marked by a bright red head; but one or two of the species have the head plain, and red spots on the ends of their wings—*i. e.*, on the ends of their tails as they sit on the leaf; these species spin about their tails instead of their heads.

All these cases point to one supposition. The insects, for some reason, derive an advantage from apparent inversion of the two extremities of the body. Now, in collecting, we often find that these inverted species escape us. We have learned to make allowances for the insect's flight when we throw our net over it; we always aim to throw a little in front of the head; but with the inverted species we are deceived, and throw a little behind the tail, when the insect immediately flies away.

I can suppose that the birds are deceived, just as we are; that they pick a little behind the insect's tail instead of a little in front of its head; and hence, that the species is protected by its inversion of coloring. However, I may be wrong; these phenomena must be more carefully studied before we can reason much on them. Of one thing, however, we may be certain: the inversion is not a mere useless whim of nature. More and more we are coming to see that *no* form, *no* coloring, *no* pattern of sculpture is meaningless or useless. Much as we may admire the beautiful tints and ornamentation and plumage, we do not yet know their full value; they are not simply a beauty of nature; they are features of that deeper beauty, the great unfolding scheme of life.

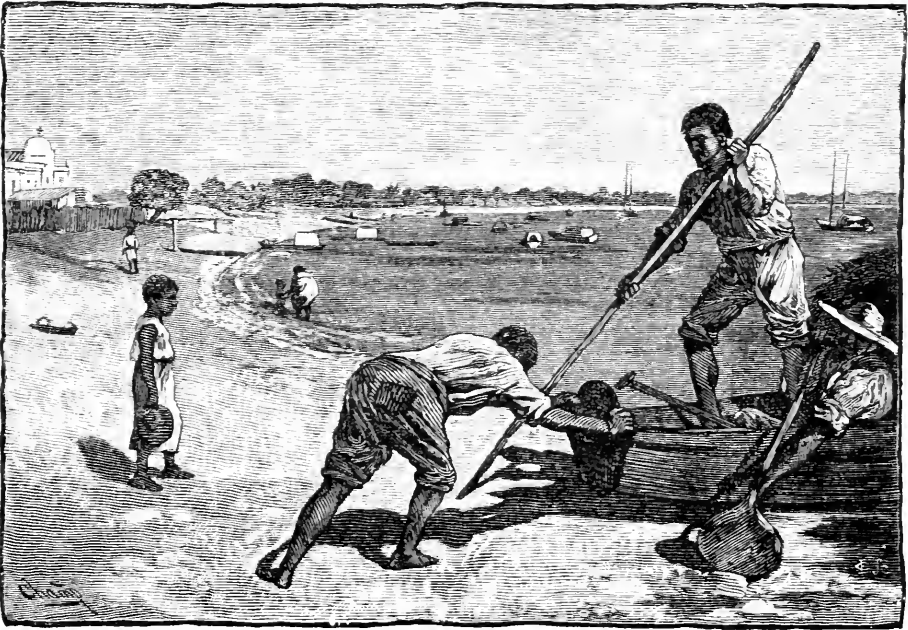
## CHAPTER VIII.

### THE TAPAJÓS.

FIRST we must have a canoe. There are scores along the beach, but they belong to fishermen or merchants, who do not care to let them; this one is too small, and that too large, and another is leaky; only after a day of disappointments we find a craft that suits us entirely. It is made of *itauba* wood in the ordinary canoe pattern; the bottom all of one piece, turned up at the ends, and the sides strengthened with a board all around. The length is about sixteen feet; rather more than a third of this, in the stern, is occupied by the little arched cabin of palm-leaf mats. The owner, Ricardo, promises to see that the hull is freshly calked and tarred; he proposes to go as steersman, so we have one man secured. My servant, Pedro, will do for another; we pick up an Indian, Joaquim, at the Aldeia, and, to complete the crew, a queer character who is lounging about the town, an English sailor or miner, or Jack-of-all-trades, named Dunn. Slabs of dried fish and a basket of farinha are stowed under the *tolda*, with sugar and coffee, and sundry boxes of biscuits and cans of preserves for our own use; these, with our trunks and the men's bundles, fill the little space completely. At the last moment one of the men comes down with a great basket of oranges and bananas, which are stowed in the bow with our less perishable luggage.



"*Adcos!*" shouts Ricardo ; Dunn sees a mulatto beauty on the beach and flings back a last sarcasm. The two Indians take their paddles with smiles on their dull, good-natured faces ; and so we push off into the bright water. It is four o'clock ; Santarem is just waking from its afternoon nap, and there is a subdued bustle about the streets and shore. Looking away from the white walls and beach, the opposite shore is in strong contrast ; green varzea meadows, with clumps of trees at the water's edge. No houses are visible in



The Embarkation.

this direction. Cattle are pastured on the meadows, but they are out of sight behind the bushes ; we see only the rich lights and shadows, stretching down to the Amazons.

The Tapajós, opposite Santarem, is rather less than three-fourths of a mile wide, but it is very deep ; no less than one hundred and thirty feet in some places. There is very little current : it seems more a lake than a river, with the clear water and the wide reaches above. Here and there, the 'sur-

face is marked with green streaks, millions of little particles. These particles poison the water in the dry season, and make it unfit for drinking. Probably they are confervoid growths that accumulate in pools above the rapids.

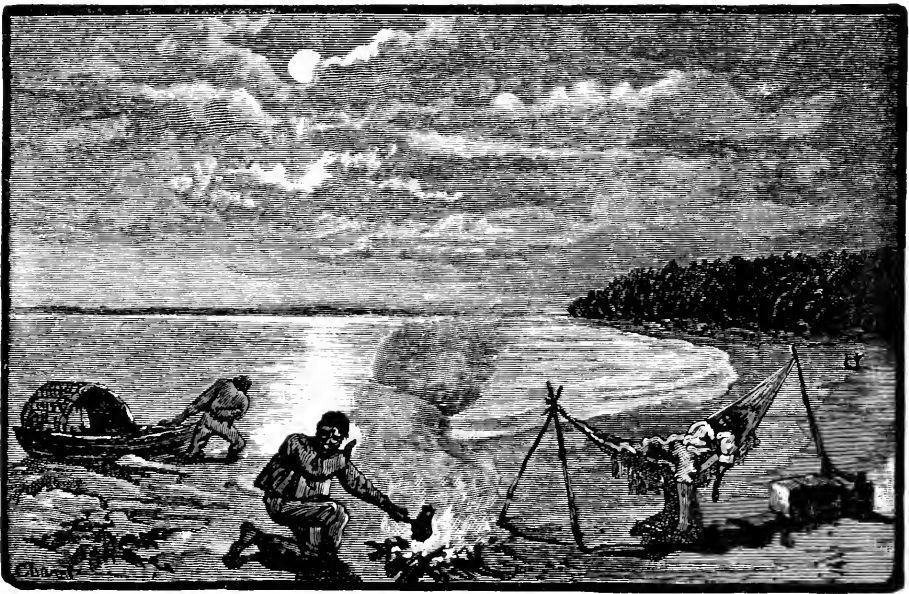
There is a smart breeze from the east. Ricardo has the sail up directly, and our little craft dashes along gloriously over the ripples. In fifteen minutes we have run past the Point of Mapiri,\* conspicuous for its lime-works. Now we lose sight of Santarem, and the river begins to widen out: the bay of Mapiri on one side, and the great *Enseada das Araras*, Macaw Gulf, on the other, make a stretch probably seven miles across; but it is narrower above. Southward lie the blue hills of Diamantina and Panéma, and the outstanding, bare, conical *Serra de Irurá*, a beautiful picture. *Serra de Panéma* is the extreme northwestern point of the highlands, and it divides two little water-sheds, clear streams, uniting to form the *Igarapé de Mapiri* on the north, and the *Igarapé-assú* (Big Creek) on the south. Both of these empty into the bay of Mapiri; beyond their mouths, picturesque white clay-cliffs stretch to the *Ponta de Maria e José*, the farther limit of the bay. The near ground has that peculiar, gray, semi-forest tint of the sandy campos which lie just around Santarem; but all the highlands beyond are rich with forest. Dunn fancies that he can distinguish one or two cane-fields of the Americans, but he may well be mistaken.

Past white cliffs, and past sand-beaches and rocks beyond. On the northern side a great point of lowland stretches toward us, and here the little *Furo de Arapichuna* is always

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\* Otherwise *Ponta de Salé*. The lime-works, owned by Sr. Souza, of Santarem, are quite important. Limestone is brought down the Tapajós in barges, and burned here.

emptying yellow water into the clear Tapajós. The Arapichuna is an Amazonian channel: all the lowland on that side is built up of Amazonian mud, for the Tapajós has nothing to build with; its water carries no sediment at all. The yellow river is still encroaching on the clear one, through this Furo de Arapichuna, which has built the point, and is lengthening it every day; *Enseada das Araras* is simply a bay, left at the side of this mud-point, and in time, no doubt, the growth of the point will leave it a lake, with varzea



Camp on the Tapajós.

meadows on either side. For the rest, all this lowland lies directly across the real channel of the Tapajós, which runs north and south; by and by we shall have occasion to compare it with similar formations at the mouths of other rivers.

We are following the highland shore, which begins to swing around to the southward. Every little point and bay has its sonorous Tupí name; I hope that Brazilians may have the good taste to retain them, instead of putting saints'

names and theological phrases in their place. All the Indian designations were formed naturally. Let us suppose, for example, that some fisherman wished to direct his companions to a certain point or bay; there was no acknowledged name, so he pointed out the locality by some feature that distinguished it, or some event that had happened there. "That point where we saw the alligator yesterday," or, as he would put it, "The point of the alligator." Next day, or the week after, some one is telling the story of their adventures. He appeals to his companions. "This happened on such a day; you remember: when we were encamped at the Alligator Point—*Ponta do Jacaré*:" using the same designation, because it has been used once before. In course of time the name is adopted by general consent, without any special baptism. So with other places: a black water-stream comes to be the *Igarapé-pichuna*; a toad-shaped rock gives its name to a point—"Ponta de Cururú;" and so on. Even at this day you will notice the formation of these names. "Look," says Joaquim, "canoe on the shore!" "Where?" asks one. "Why there, don't you see? On that beach of the javary palms—*Praia das Javarys*;" and the place is known at once. If any marked event takes place here, we shall talk all through the voyage of the Javary sand-beach, and the name may go down for a thousand years, long after the javarys have disappeared.

Away to the westward, the land is only a dark line, with the sun sinking behind it; fleecy clouds above catch the glow for a moment, and then gray twilight settles down over the water: the short, tropical twilight, that warns us to seek a camping-place for the night. We run the canoe aground on a long sand-bank; the men bring dry wood from the forest near by, and presently we have a bright fire, over which

our coffee simmers delightfully. Meanwhile, poles have been set to support our hammocks, and the men have found beds in the sand. The wind is strong, and the waves are beating monotonously, but the canoe is dragged up safe beyond their reach; listening to them we sink to sleep; all night long our hammocks are swaying, and the waves are washing, and clear stars are shining overhead, for the east wind brings no rain. *Noche clara y serena.*

The morning is magnificent; waves are rolling white by this time, and the air almost sparkles. We bathe in this fresh-water surf; then, while the men are preparing coffee again, we stroll up and down the sand and pick up numbers of shells—young *Unios* and *Anodontas*. In a pool near by there are great river-snails, *Ampullarias*, and everywhere on the pebbles we find fresh-water sponges. Little painted sand-frogs hop about here by thousands, and there are numbers of peculiar insects—tiger-beetles, and flies, and wasps; we could entomologize for days. Here, too, we see the handsome *jará*\* palm, for the first time; a moderate-sized species, with slender stem and graceful, drooping leaves. Exploring farther, we find a little lake, not more than half a mile across, all shut in with steep slopes, except where this bank separates it from the river. A tiny stream flows down over the sand and clay, with cascades here and there; perhaps the whole fall may be twenty feet. *Lago da Agua Preta*—Black-water Lake—the men call it; the water is dark green, very clear and deep, reflecting the forest-clad hills about it, and the caraná and javary palms; it is as unlike the shallow varzea lakes as the Tapajós is unlike the Amazons. *Lago de Tapary* is like this one, a true terra-firma lake. Ricardo

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\* *Leopoldina pulchra.*

says that pirarucús are found in both, but the water is too deep for successful fishing.

The waves are rolling so high that we can hardly push the



jará Paim.

canoe out; we run off before the wind at racing speed, and heel over frightfully under our great sail. Ricardo sits steadily in the bow, steering with a paddle; the other men stand ready to drop the sail at a moment's notice. We run gallantly along the picturesque shore, watching the white clay-cliffs and sandstone rock here and

there,\* and the fringing sand-beaches below; not a house or a sail in sight, and the river always widening. Rounding the

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\* I may as well state here that all these Lower Tapajós rocks, and as far up as Aveiros at least, are soft sandstones and clays; all that we know of their position is contained in the cautious remark of Prof. Hartt: "Not a trace of fossil remains has, as yet, been found in these beds, so that their exact age cannot be determined, but they are certainly not older than the Tertiary." Report of a Reconnaissance of the Lower Tapajós: Bulletin Cornell University (Science), vol. i., No. 1.

rocky *Ponta de Cururú*, we are fairly in the main north and south course ; it is only at its mouth that the Tapajós is narrowed by Amazonian varzea, and forced into a great bend to the east.

Now you see what a magnificent channel this is. The western shore is terra firme like this, but it appears only as a blue ridge, eight or nine miles away ;\* to the south there is a great open horizon like the sea. Northward, the great bay of Villa Franca gives another clear horizon. This bay is properly the mouth of the river *Arapuins*, which has its origin in the hilly, densely wooded lands between the Tapajós and the Maués. "After forming some rapids, it descends to the plains ; receives one affluent from the south, and another from the west ; turns east-northeast to the point of Curupá, where it is already five hundred metres wide. Thence it flows twenty miles to the bay of Villa Franca, its width one to one and a half miles, and the beautiful white sand-beaches contrasting with the dark blue of its water ; half-wooded campos on the right, and low, wet lands on the left, very much like those of the bay." † The bay itself takes its name from a pretty little village on the western side of the river, where the land is high and free from fevers. Beyond lies the great lake of Villa Franca, celebrated for its pirarucú fisheries and for the cattle fazendas along its shores.

The river water is wonderfully clear ; just by the rocky shore it is very deep—forty fathoms, says Ricardo. A lit-

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\* Nearly ten miles just above. The measurements given by Tavares (O Rio Tapajós, p. 7) are as follows: At the mouth, 1,700 metres ; from Tapary (our first camp) to Villa Franca, 12,964 metres ; opposite Alter do Chão (the greatest width), 14,816 metres ; at Boim, 7,408 metres ; at Pinhel, 11,100 metres ; at Aveiros, 3,204 metres ; at Cury, 6,232 metres ; and at Itaituba, 3,204 metres. Most of these figures, I fancy, are merely approximations.

† D. S. Ferreira Penna : A. Região Occidental da Provincia do Pará, p. 167.

tle farther on there is a great sand-bank, stretching a mile into the river. The steamboat channel is comparatively narrow off this sand-bank; beyond, there are dangerous shallows, as there are in many other parts of the Lower Tapajós. For our part, we do not fear the shallows, but with wind from the north our clumsy little canoe will not weather the sand-bank, and we run plump against it. The men jump out and drag us around through the shallow water, tugging at a long rope and enjoying the fun; this brings us into the pretty bay of *Alter do Chão*, Earth-altar; the bay, and a little settlement, take their name from a strange, wedge-shaped clay hill that stands all alone in the campo near by. We paddle across to the village, where there is a little clear creek running over the sand. The canoe is pushed into this, with some difficulty, owing to the swift current; and we walk up to the settlement. A more dilapidated place you will not find in the province. The thirty or forty palm-thatched houses are arranged irregularly about glaring sandy streets; one tile-covered building and a half-ruined church are the best structures that the village affords. The people—Indians and half-breeds mostly—seem half-starved and wholly lazy. There are, it is said, four hundred and thirty inhabitants.\* A little tobacco and mandioca are planted on the rich land farther back; but the place is noted for the perennial hunger that reigns in it. The fisheries along these rocky shores are by no means good. “When we arrived in port,” says Mr. Bates, “our canoe was crowded with the half-naked villagers—men, women, and children, who came to beg each a piece of salt pirarucú, ‘for the love of God.’ They are not quite

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\* According to Tavares (1876); Barboza Rodriguez (1875) gives 593; and Ferreira Penna (1869) allows but 138, including those in the immediate vicinity. Among these conflicting authorities, I am at a loss to give an opinion.



so badly off in the dry season. The shallow lakes and bays then contain plenty of fish, and the boys and women go out at night to spear them by torchlight."

We carry our letter of introduction to the village school-master, who volunteers to go with us to the wedge-shaped Alter do Chão, or *Serra Piróca*,\* as the Indians say. The path, after crossing the igarapé, lies over sandy campo, much like that of Santarem; but the trees look fresher, and there is much green grass. The serra is quite as steep as it looks to be; we scramble up the sides, clinging to grass-tufts and fern-stalks, for there are no trees; the top is a ridge about three feet wide, and, with the sweeping wind, we are much inclined to hold on to whatever is near. But the view is worth the trouble. Tapajós spreads gleaming to the blue shores of Villa Franca; beyond, we can just distinguish some distant hills, far off by Lago Grande. The bay and the sand-beaches are below us on one side; on the other are sandy campos, stretching to the picturesque wooded slopes beyond, and a lovely, clear-water lake, half hidden among the hills. We could gaze for hours, but our time is limited, so we only stop for one or two hasty sketches; noting that our aneroid marks ninety metres above the river, and eighty above the campo. We notice many curious trap-door spiders about the top. Notwithstanding the steepness of the hill, we can distinguish very little of the geological structure.† We pick up some curious hard iron-stone nodules about the base of the hill; round, hollow, and filled with white sand; we have seen something similar at the Serra de Irurá, near Santarem. We have only time now to visit the lake, which is close by the village, emptying into the Tapajós by the little rapid creek

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\* Tupí: "bald."

† See Hartt: op. cit., p. 35.

where our canoe is lying ; the water is wonderfully clear, without a trace of the green confervoid particles that we see in the Tapajós. From the serra we noted how the lake divides into two long arms, each of which receives a little stream ; the general surface may be one or two feet above that of the Tapajós. This lake is not as deep as the Lago de Agua Preta, which we visited this morning, but it greatly resembles it otherwise. Clearly, all these terra-firme lakes are simply the valleys of little side streams that have been filled in with water. This one of Alter do Chão shows it plainly ; the lake forks above, and each fork receives a stream ; but draw out the lake water and there would simply be a forked stream flowing into the Tapajós. Remember that the river rises at least thirty feet every year, and at this time it brings down considerable quantities of sand. The little stream brings down sand also ; in time a bar is formed across its mouth. This bar is covered during the highest floods, but it is twenty feet or more above the river at low water, thus forming a dam, over which the lake water flows in a little swift stream, as at Alter do Chão, or a series of cascades, as at Lago de Agua Preta.

The bay of Alter do Chão has its history. It must have been here that Pedro Texeira found the principal Tapajós village :

“ Leaving the Amazons, he entered the Tapajós for twelve leagues, until he came to a harbor of crystalline waters, with beautiful groves forming a canopy around ; a delightful place, where he found the new tribe already advised of his visit by his friends, the Tapuyusús. However, remembering always the inconstancy of fortune, he disembarked in the immediate vicinity of the village, and fortified himself with all good order and military discipline ; but when he was satisfied of their fidelity, he met them with more confidence, and found them less barbarous than their neighbors ; he heard, also, probable reports that the

tribe was due to the commerce of the Castilian Indies, from which they had retired. He remained here some days with friendly intercourse, and after purchasing some handsome mats and other curiosities, returned to Pará, justly pleased with his discoveries, but with very few slaves; for the Tapajóses esteem these in such sort that they will rarely part with them." \*

Afterwards, the mission village of *Borary* was formed here; some say *Pucrary*,† because certain polished stone beads or ornaments, called *muirakitans*, were found in the lake. The place must have risen to some importance, for in 1758 it was constituted a village; but in 1841 it was reduced to the category of a settlement, where it is likely to remain. Besides the proverbial laziness of the people, the fire-ants‡ are doing their best to depopulate the place. Generally these ants are found about sandy and weedy streets, and near water; loamy and forest ground is free from them. The species is rather less than a quarter of an inch long, but the pain caused by its sting is out of all proportion to the size of the insect.

Our schoolmaster friend is a good deal surprised when we say "*adeos*" to him; he—Brazilian fashion—would have rested for the day after such a tramp. But we are off down the igarapé and on the river, where the breeze is strong yet, coming in puffs that do their best to upset us. Rounding a point, we lose sight of Alter do Chão and so sail on until night, when the wind dies out and our men push on with the paddles. We go into camp finally, at a place called *Aramanahy*: a narrow sand-beach, with steep hillsides beyond. There are three or four houses here, palm-thatched like those of Alter do Chão. One or two of the men stroll down to our boat curiously; they offer us a shelter for the night, but we

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\* Berredo: *Annaes Historicos do Estado do Maranhão*, 2d ed., p. 240.

† *Pucrá*, a bead, *yg.* water.

‡ *Myrmica sævissima*.

prefer to sleep on the beach. After supper, however, we return their visit; the people here are farmers in a small way, and commendably industrious; we find them all, men, women and children, busily at work by the dim light of one or two tin lamps. They are preparing tobacco, cutting out the midrib and twisting the leaves into long rolls. The Tapajós tobacco is considered the finest in the Amazons valley. It is cultivated on the rich black lands along the edge of these bluffs, where the Indians had their villages long ago. In the morning we climb the hill to inspect one of these village sites, but find only a few fragments of pottery. In other places there is abundant harvest for the archeologist. All along this side of the Tapajós, from Alter do Chão to the lower rapids, the bluffs must have been lined with these villages,\* for the black land is almost continuous, and at many points pottery and stone implements cover the ground like shells on a surf-washed beach. This black land is near the river; back in the forest, so far as we know, there is only yellow loam and clay, without a trace of ancient occupation.

The forest covers all this high land, a plateau, continuous with the hills of Panéma and Diamantina. All day we sail by bluffs like those of Aramanahy, almost a straight line, perfectly flat on top, and some three hundred feet above the river. Here and there the hillside is washed away, leaving picturesque white cliffs, or glens where little streams flow into the Tapajós; on the western side, also, we can distinguish white clay banks, but the land there is lower and more irregular; it is six or seven miles away yet. Up and down the river the horizon is clear, and the wind sweeps up gayly, with white-capped waves and showers of spray over our

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\* On the other side there is also black land with pottery, but I know nothing of its extent.

*tolda*; we are obliged to lower sail now and then, to keep the canoe from capsizing; well for us that it is so heavily laden. We eat our breakfast in the boat, and smoke fragrant cigarettes, and set the men to telling stories, as they will on long voyages. Ricardo, who is familiar with the river, points out places of interest on the shores. On the western side there is *Boim*, ancient mission village of Santo Ignacio, with a curious history of changes.

“This village was anciently situated, in the year 1669, near the river Amazons, and on high land; but because of the many mosquitoes the Fathers changed it to a lake near by. The first village was founded by Father Antonio de Fonseca; he or his successors built a convent, so beautiful and well formed that its goodness was the bane of many Indians and priests, who came to live here, and died because of the malignity of the air; therefore, in 1737, the whole village was removed to the Tapajós, where it now is.”\*

The original proselytes, it is said, were Tupinambás; but, at this day, the tribes are so mingled that it is impossible to tell one from the other. Boim is a little larger, and a shade less dilapidated, than Alter do Chão; we can faintly distinguish some of the houses near the water's edge.

In the afternoon we pass by two or three little creeks,† with stretches of lowland about their mouths, recalling the Amazonian varzeas behind us. Near our camping-place (*Andirá*) there is a single house, but the people are fuddling with mandioca beer, and we do not care to disturb them. We cook some fish that the men have caught, and eat with such an appetite as one gets in the open air; the ruddy firelight flickers over tree-trunks and branches on the bank above, and casts long shadows across the sands; there are

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\* Moraes : *Historia da Companhia de Jesús*.

† Igarapé Paquiatúba, Igarapé Piní, Igarapé Jauary.

no torturing mosquitoes in this region, and we sleep in peace, lulled by the waves and the sighing wind.

We are off again by daylight, running always by picturesque low hills, with beautiful glens and fringing sands below, and white cliffs contrasting curiously with the forest.\* We stop to cook breakfast under one of these cliffs, by a clear, cold water stream from the hills; a charming spot, where the little white sand-beach is all overhung with bushes and vines, and the cliff itself is half-covered with their curtains. We bathe in the bright waters; then ramble along the shore, finding rich treasures of insect and bird life, and beautiful, soft ferns. Wading about in the shallows, we collect numbers of river-shells, half a dozen different species; we must feel for them in the mud and sand with our bare feet, and then dive for them, if the water is deep. The men declare that the bivalves are eaten, but they do not use these, so I fancy that they are not much esteemed.

The river is narrower now, hardly five miles wide, and a little above, the channel is divided by low islands, with grass or trees; varzea, in fact, much like that of the Amazons, but largely made up of sand instead of clay and mud. On the western side a great space is covered with this low land, so that the main channel is hardly over a mile wide. We have left the lake-like expanse of the Lower Tapajós, and are entering the region below the falls, where the river is filling the channel with sediment.

Toward night we reach the little village of *Aveiros*, on

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\* These cliffs are formed of friable sandstones, and some of them present curious instances of oblique lamination, as at Pennacova, where the succession is as follows, beginning below: 1. Purple sandstone, horizontal. 2. Similar to 1, laminæ inclined S. at about 30°. 3. Purple clay, not laminated. 4. Yellow sandstone, laminæ dipping N., 25°. 5. Clay, decomposed.

a high bank above the river. It is a picturesque place, the more so, I suppose, because the streets are neglected, and the little church is falling to pieces, and the houses have a general air of decay. Yet in its time, when trade from the upper rivers centered here, Aveiros was a place of importance. Of its subsequent history you may judge by a few passages from various authors. Bates, who was here in 1852, writes :

“Aveiros may be called the headquarters of the fire-ant. The place was deserted a few years before my visit on account of this little tormentor, and the inhabitants had only recently returned to their houses, thinking its numbers had decreased. The soil of the whole village is undermined by them ; the ground is perforated with the entrances to their subterranean galleries ; the houses are overrun with them ; they dispute every fragment of food with the inhabitants, and destroy clothing for the sake of the starch. They seem to attack persons out of pure malice ; if we stood for a few moments in the streets, even at a distance from their nests, we were sure to be overrun and severely punished, for the moment an ant touched the flesh, he secured himself with his jaws, doubled his tail and stung with all his might. When we were seated in chairs in the evening, in front of the house, to enjoy a chat with our neighbors, we had stools to support our feet, the legs of which, as well as those of the chair, were well anointed with bitter copaüba balsam.”

Sr. Penna's description, in 1868, is still more graphic, with a touch of sarcasm :

“*Aveiro*.—This settlement is situated on the right bank of the Tapajós, in a very beautiful and pleasant place, but without inhabitants because of the *formigas de fogo*. A primary school has been created here by law, but no one has profited by it, because no one lives here.”

After these warnings, we are a little afraid to enter Aveiros at all, but on venturing up the steep pathway we are agreeably surprised to find so few of the ants. They are indeed plentiful enough, and as pugnacious as ever, but the

numbers are not a tenth of what they were. There are people enough here to form a respectable village, as things go on the Tapajós; the exact number of inhabitants I know not, nor would it be worth while to record, for within ten years the place may be depopulated again by the terrible pests. Aveiros people laugh now when you speak of fire-ants. "Oh! those were in the past; there are none here now."

The village schoolmaster (there is one now, and a school) invites us to sleep at his house; we accept his hospitality, not without longing regrets for the breezy shore; he walks about the village with us, where we find some clever and good-natured people, Indian and white.

After that, our hammocks are swung in our host's sitting-room, and we sleep without molestation from the ants. In the morning we are off across the river to the Indian village of *Santa Cruz*; Mundurucú Indians, it is said, but they are not tattooed like those farther up the river, and except for their being taller and stronger, we might take them for Tapuios, like Pedro and Joaquim. They have been celebrating some festival, and two or three of the young men come down to meet us, decidedly drunk; yet, for the most part, these Indians are sober enough. We go to visit the *Tucháua* (chief), and find him sitting in his hammock, from which he rises politely to greet us. He may be sixty years old, but his form is hardly bent. He talks of his friendship for the whites, and regrets the decadence of his village; altogether, proves to be a very sensible old man. His wife, dressed only with a petticoat, stands behind him meekly, and takes no part in the conversation.

All through this part of the river, the islands and sandbanks occupy a great part of the original channel, which,



besides, is narrower than below; not more than four miles at the utmost, from highland to highland. Not far from here, the important little river Cupary enters from the eastern side. Mr. Bates, who ascended the Cupary in 1851, gives us an excellent account of it. Along its lower course it is no more than one hundred yards wide, but very deep; no bottom with eight fathoms, and the high banks gloriously wooded. At the lower falls, the channel is forty yards wide; here there are villages of the Mundurucú Indians, and Mr. Bates found them chasing after the wandering Parárauáte tribe, which had been marauding in the vicinity. One often hears of these wild tribes along the Tapajós. Near our camping-place, at *Mongubal*, we visit a house, where the owner shows us two curious arrows. They were obtained about sixty miles above here, at the falls of the Tapajós, and there is a bloody little history attached to them. Some weeks before, wild Indians (said to be Parentintins; but the nomenclature of these wandering tribes is hopelessly confused) attacked a settler's family and killed one of the women; but they were driven off before they could do more harm. These arrows were picked up at the house after this attack. They are of exquisite workmanship; the head of bone, wound on tightly with some kind of thread; the feathering of beautiful macaw-plumes. Yet these wild tribes have not a single iron tool to work with. We hint our desire to buy the arrows, but our host at once presents them to us, and will hear of no remuneration.\*

This man at *Mongubal* is an Indian, almost pure-blooded it would seem, but for a wonder he is engaged in manu-

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\* I regret to say that these arrows were lost, else I would describe them more carefully and give a drawing. I never saw finer workmanship on any savage weapon.

facturing bricks and shipping them to Itaituba; the place shows many signs of thrift. Besides the arrows, he gives us two beautiful diorite axe-heads from the black land near by; finally, he invites us to an excellent breakfast, with beef from his own herd, and vegetables from his farm. The two or three other farmers at this place are engaged in tobacco-raising. They are industrious people and good-natured, and we leave them with regret.

The river is still narrowed by islands, sometimes rocky, oftener low varzea, with great sand-banks gleaming whitely over the dark waters. The main channel is seldom more than two miles across, and not very deep; the wide reaches below were still like a lake, but here there is a very perceptible current—in the wet season a swift one, and then the islands and sand-banks are covered. We miss the steady wind of the lower river; often our men have to paddle for hours, and the breeze, when it does come, is in dangerous puffs. In the afternoon we are overtaken by a heavy storm. Ricardo sees it and gets the sail down in time, but our little canoe rocks and tosses about alarmingly, and torrents of rain drench us all to the skin. After this burst, the clouds keep up a steady drizzle until night. Wet and tired, we seek shelter at a solitary house, but the negro occupant declares that his master is absent, and he cannot let us sleep here. This looks inhospitable, with the rain increasing, and the wet beach without a tree to swing our hammocks from. We expostulate, and at length obtain permission to occupy a muddy kitchen back of the house; so we pass the night uncomfortably enough, and are not sorry to leave in the morning. Servants, left in charge of houses, are always afraid to entertain travellers; this is almost the only exception to the rule of country hospitality.

There are no more of the white clay-cliffs along this part of the river. We have passed from these comparatively modern formations to old rocks—Carboniferous, and perhaps Devonian, with black diorite here and there. At *Ipapichuna* there are limestone cliffs, where we find many poorly preserved fossils, and, in one thin layer, very good ones: *Producti* and *Streptorhynchi*, all washed out by the action of the water, and just attached to the lower surfaces of great slabs. We break up a number of these; our men get interested in the work, though they do not understand it at all, and when we have obtained all that we can from the shore they go diving after other slabs in the clear water below, where we would never have noticed them.\*

It takes us half a day to collect and pack our fossils, the drizzling rain still falling, and we thoroughly wet. However, the sun comes out gayly at noon, and we push on, stopping now and then to examine rocks along shore; the channel less than a mile wide, but there are smaller ones beyond the islands. Toward night a fine breeze comes up, and so we dash across to *Itaituba*, term of our voyage. We are nearly a hundred and fifty miles from Santarem.†

A long row of whitewashed and tile-covered houses, with a pebbly beach in front, and the dark forest behind; the setting sun tinges the land with mellow crimson, and glows on the rippling water. So Nature seems at peace, and you forget that Itaituba owes its origin to bloody war. During the rebellion of the Cabanaes, in 1835, the place was used as a

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\* The fossils are similar to those of Itaituba, described by Profs. Hartt and Derby. See their reports: Bulletin Cornell University (Science), vol. i. No. 1.

† 233 kilometres, according to Tavares, who is probably the best authority; Chandless makes it 176 miles, and Barboza Rodriguez gives 37 Brazilian leagues, which would correspond to 128 English miles, nearly.

rendezvous of loyal citizens and Mundurucú Indians; from a temporary camp it became a fixed settlement; and in 1856 it received a village charter. The municipality includes all the Tapajós region above this point, to the confines of Matto Grosso: a sufficiently extended territory, containing, probably, ten or fifteen thousand inhabitants,\* besides wandering Indian tribes. Only a few hundred of these are whites; the rest are largely Mundurucú and Maué Indians, only partially civilized. Itaituba itself is composed of some fifty houses,† the half of them very well made of adobe or brick, and forming this line fronting the river; the rest are palm-thatched huts. The village, and all this part of the Tapajós, are unhealthy at times; in the dry season the water is really poisonous, though it is as clear and bright as crystal; intermittent fevers are prevalent during the rains.

At Itaituba we pass ten days pleasantly, exploring the vicinity for fossils, and getting acquainted in the village itself. Of the score of white families here, the most are engaged in trade; there are seven well-filled shops, and ten or twelve trading canoes are sent out from time to time; of course, very little of their custom depends on the village itself. The canoes make voyages far up among the rapids of the Tapajós, bartering for rubber and drugs with the Mundurucús. Sometimes parties come down from these upper settlements to trade at the villages; large, stout-looking Indians, the older men and women often tattooed with black about the face and body, in a kind of lat-

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\* 7,873 by the census of 1872; but very little reliance can be placed on this. Sr. Penna (1868) calculates 30,000 souls.

† Barboza Rodriguez says 37, and immediately after he gives the population of the place (following the census, no doubt) at 1,573 persons. This, probably, includes the vicinity for miles around. The village itself has about 200 inhabitants.

tice-work pattern. Some of them speak Portuguese very well; others understand only the universal *lingua geral*, or their own Mundurucú dialect. The merchants speak in high praise of these Indians; they are honest and faithful, the firm friends of the whites, and the most industrious people on the river. We hear quite another story of the Maués tribe. "*Basta o nome*," says one; "*mdu é*" (Maué): "The name is enough: he's bad." So they are bad, dirty and dishonest, and lazy to the last degree; yet this tribe seems to be an offshoot of the Mundurucús, disinherited, we may suppose, because of its irredeemable shiftlessness.\* At present, the two tribes are inveterate enemies, and often at war with each other.

Life at Itaituba is as free and unceremonious as possible. We hardly ever see a black coat; of an evening the men sit in front of their houses in their shirt-sleeves, smoking, and enjoying the cool air, as we have seen at Santarem. Then, and sometimes at night, they play at cards, always for money, and frequently the stakes are pretty high. Everybody gambles here, from the Indians and negroes to the thriving merchants. Groups form in the stores during the day; after dinner the men stroll about, playing with this acquaintance or that; we see a lady of good family sitting at her window, and playing with a gentleman in the street, while her husband, near by, is playing with somebody else. A tall mulatto—professional gambler and known blackleg—is fleecing all the young clerks; if we start on an early canoe-excursion, we see lights still shining in his windows, where he has been playing all night. "Do you play?" he asks. "No? That is the greatest mistake in your character.

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\* This is the tradition; but the languages are quite distinct. Both are allied to the Tupi.

Now let me teach you *one* little game." But happily we are proof against his blandishments, and our money remains in our pockets. It must be said of the Itaitubans that their gambling is good-natured. With them it is "quick come, quick go;" they make money easily by their trading, and spend it easily in this way. We remark that the place has no church, though there has been one in course of construction for some years; possibly a good priest might weed out this vice, but in general the priests gamble quite as readily as their parishioners. An irreverent acquaintance of mine spent all of one Sunday afternoon, behind a village church, playing cards with the priest, for a *vintem* the game!

The beach at Itaituba is strewn with fragments of limestone, and not a few well-preserved fossils; in great bowlders lying near we get other fossils, but by dint of much pounding with the sledge, for the rock is abominably hard. The banks farther down are fringed with beautiful open woods; back of the village these woods extend for a little distance inland, and thence there are campos, with scattered trees of three or four species, extending northward and westward some miles, to the high forest beyond. All along the Lower Tapajós you will find occasional small tracts of campo, either sandy, like that of Santarem and Alter do Chão, or stony, or argillaceous, like this at Itaituba. Generally, these campos occupy ground near the level of the river; they may be looked upon as fragments of the great *campinas* far above the falls, and the still more extensive open lands of Central Brazil.

We make one excursion above the village to the little *Igarapé Bom Jardim*. The mouth of the igarapé is about two miles from Itaituba, and on the same side of the river; it is a sluggish creek, with unwholesome water, stained black

with vegetable matter. A little way up, there is a lime-kiln, and extensive quarries have been made, whence the rock is shipped to Santarem. Still farther on, the creek is winding and narrow, with limestone ledges here and there, and little caves, where, during the floods, the softer layers have been dissolved away. Crawling into one of these caves, we pick up a few delicate silicified fossils on the ground, and presently discover that the roof above is studded with them, all washed out cleanly, and just attached to the rock, so that they are ready to drop at the slightest jar. There is a shout at this; but we are almost afraid to touch the beautiful things; slender spines and processes are as perfect as they were when the shells were buried in calcareous mud.\* We gather hundreds of them here and in the other caves; fine, large *Producti* and *Spirifers*, and little *Strophalosia* all covered with hair-like spines, and numbers of other species that must be studied with care, for many of them are new to science. The igarapé itself is by no means a pleasant stream; the waters smell strongly of sulphuretted hydrogen, and they swarm with great alligators. We try to push beyond the caves, but come to a *cul-de-sac* in a swamp. Along the Tapajós above here there are great cliffs of the limestone, conspicuous for miles up and down. The Brazilians call these cliffs *Paredão*, Great Wall; we find no caves, and no silicified fossils, but one layer contains numbers of little spiral shells, *Murchisonia* and *Pleurotomaria*, of which we gather great numbers.

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\* I describe the caves as they were when Mr. Staunton and I discovered them in 1870; since then the locality has been pretty thoroughly exhausted by three American expeditions, and a Brazilian one (Barboza Rodriguez). Mr. Derby described these shells (Coal Measure), and showed great skill in dissolving the limestone with acid, so as to expose the most minute interior structures. Mr. Chandless found similar caves on the Maué-assú.

Itaituba is at the head of steamboat navigation. Twenty miles above here, the water is foaming over rocks at the *Maranhão-zinho*; above that there are other and greater falls and rapids, a long series, with intervals of still water, to the sources of the Tapajós in the rivers Arinos and Juruaná, between lats.  $14^{\circ}$  and  $15^{\circ}$  S.\* Here also the Rio de la Plata takes its source. The maps will have it that there is a chain of mountains forming the divide, but in truth there is only an elevated plain, "a *taboleiro* or *chapada*," says Chandless, "hardly varying in its general elevation, but cut through deeply by the rivers. Near these there is more or less virgin forest; all the rest is campo, pasture-lands more or less densely sown with trees. The chapada is cut down steeply, sometimes precipitately, the plain below appearing like a sea, with bays and deep creeks. At the foot of the chapada, in one of these bays, is the village of Diamantina." The Paraguay flows from the sides of the chapada, ten or twelve miles southwest of Diamantina; and the Rio Preto, affluent of the Arinos, is ten miles to the eastward of the village. But the two great rivers approach each other even more closely, as Castelnau has recorded:

"The Fazenda do Estivado, where we are resting, is situated at one of the most curious points on this continent. Here, only a few paces apart, spring the fountains of the two greatest rivers in the world, the Amazons and the Plata. Some day it will be easy to establish a communication between them; for our host tells us that he thinks of conveying the water of one river by a canal to the other, only to water his garden. The fountain-head of the Rio Estivado, true trunk of the Arinos, is in a hollow of the chapada, where it is inclined to the north.

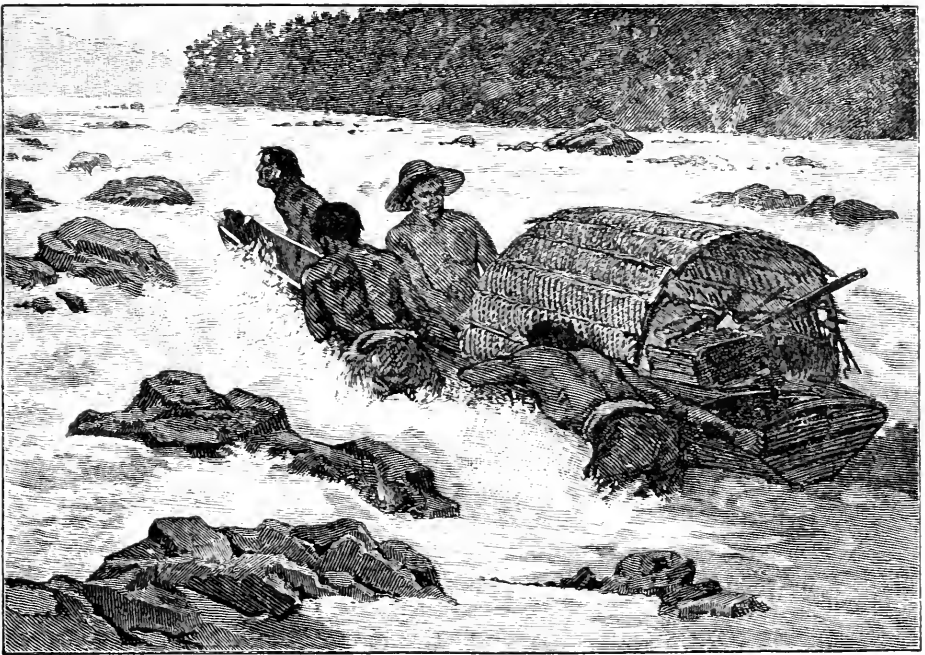
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\* According to R. F. de Almeida Serra, the source of the Juruaná is in lat.  $14^{\circ} 42' 30''$  S., and long.  $60^{\circ} 43'$  W. G. The village of Diamantina, according to Chandless, is in  $14^{\circ} 24' 33''$  S. lat. and  $56^{\circ} 8' 30''$  long. W. G.; the sources of the Arinos lie from ten to fifty miles almost directly east of that point.



two hundred metres east from the house, and in a grove of miriti palms. Eighty-four metres west of the same house appears the source of the Tombador, a tributary of the Cuyabá. Near the Fazenda do Macú, during floods, the water flows down a valley, and then divides so that a portion descends to the Cuyabá and the rest to the Tapajós."

Through all this series of rapids, canoes can be pushed and dragged to the Arinos, and so to the Rio Preto, within fourteen miles of Diamantina; only some high falls must be



Ascending the Rapids.

passed by land, pulling the canoe over poles placed across the path. In fact, some canoes do make this voyage every year; and they are even dragged by land to the Paraguay, whence they can go on to the Plata. Chandless attests this:

"From time to time, when the waters are highest, canoes have passed over the water-shed; while I was in Diamantina, one with a cargo of fifteen hundred arrobas (thirty-two pounds each), which had come from near Santarem, crossed and descended the Paraguay to Villa Maria."

Perilous work it is, passing the rapids, wading in the swift currents, dragging the boat with long lines and pushing it with poles. Barboza Rodriguez's description of the Coatá cachoeira is worth translating :

“ At nine o'clock we were in front of the first fall, which appeared to me to be insurmountable. Here there was a large canoe, belonging to a merchant ; it was unloaded, and fast among the rocks, where it had been for eight days washed by the water. Leaving my own canoe in a little harbor, I ordered my men to help drag the merchant's out of its perilous position, and get it through the rapids. It was on the rocks which form the first or great fall of the Coatá, near the right bank. The two crews worked together, part of them jumping into the water, and the others going ahead with long lines of *sipó* attached to the canoe. Accustomed to this kind of work, the Indians paid little heed to the currents, bathing and diving now and then, and evidently enjoying themselves. The lines were secured to rocks above ; my pilot took the helm, and the men in the water lifted the canoe with all their might, some with their backs, others with their hands, while others still were pulling on the line. After two hours of terribly hard work, they managed to get the boat off the rocks, and it would have been washed down at once, but for the line. The men jumped aboard and the line was cast off ; they shot down with incredible velocity, but obedient to the helm, which my pilot handled most dexterously. Crossing the river, they sought a passage on the other side of the rapids, where, if the current was heavier, there were no rocks in the way. Here, as before, long lines were thrown out ahead and attached to rocks ; the men, working over their waists in the current, dragged and lifted the canoe, and so pushed it along slowly. Thus, in half an hour, they had passed the first fall to a little pool above. Shouts of joy crowned the passage ; then, dragging on a line, they passed the rapids beyond without much difficulty, and the canoe was brought to anchor by the sand-beach to which the cargo had been carried. Descending over the rocks, the men pulled my canoe up in the same manner, but with less difficulty, as it was much smaller.”

The Indians employed in this dangerous work are Mundurucús, from the villages near the rapids ; sometimes also

the Maués, but they are less reliable. On the Arinos and Upper Tapajós, the Appiacás take their place; a half-savage agricultural tribe, inhabiting the open lands of Matto Grosso. The Arinos itself is narrow and has many rapids; the Rio Preto, by which canoes reach Diamantina, is a mere creek, often obstructed by fallen trees lying across it.

If the Mundurucús and Maués are faithful friends to the whites, they are none the less savages, carrying on wars after their own manner against the hated Parentintíns, and hardly employing the European dress except near Itaituba. As we have seen, there are a few half-civilized villages below here, and one or two above. Within the falls region there is a mission village, called *Bacabal*; it was established in 1870 by two Italian Capuchin missionaries, who began their work at a little Mundurucú village, baptizing the Indians and training them to agricultural employments; some seven hundred, they say, are gathered at this place, and seventy children attend the priests' school. All this is sharply opposed by the rubber-traders, who get no profit from an agricultural community; they entice the Indians away to the rubber-swamps, and incite them against the missionaries. Perhaps there is another side to the story; they say that the priests are harsh and exacting, turning the labor of the parishioners to their own profit, and trading with goods which they bring up the river. In 1876 some of the Mundurucú chiefs went down to Pará, to complain to the President of these real or supposed wrongs; very little attention was paid to them, and they went back ill-pleased. As they were coming up the Tapajós on the steamer, one of them flew into a rage and declared that he would die sooner than go back to Frei Pelino. His companions tried to pacify him, but he, it would seem, was really insane on the subject; as the

steamer passed the deep waters below Itaituba, he threw himself under the paddle-wheels and was drowned.\*

The missionaries are far away beyond the falls, and we have no means of judging of their conduct, whether it be good or bad ; it would be unfair to rely on the accounts of their sworn enemies. But it is certain that the traders are as bad here as they are elsewhere ; beyond the reach of law, they can cheat and tyrannize as they please. Some good ones there are, merchants in Itaituba, who send canoes above the rapids to trade. A little salsaparilla is brought down, and there are plenty of other valuable products, but rubber-gathering absorbs all labor, as it does everywhere else. The trees grow on swampy islands and on the shores ; the Mundurucús, especially, gather the gum in immense quantities, and sell it to the traders, or bring it to Itaituba. The rubber is taken in exchange for clothes, knives, fish-hooks, etc., and money is hardly known above the falls. Of course, the Indians are kept in debt to the merchant, and the merchant to the exporter ; an inverted pyramid, all resting on the Indian workman at the point. The pyramid is nicely balanced ; take care, gentlemen, that it does not topple over and leave you to support the weight of this poor class, which may grow to be a colossus, as it did in 1835.

The canoes for Diamantina and Cuyabá go loaded with *guaraná*, a drug that is much used in the central provinces.† It is obtained almost exclusively from the Maué Indians, though the other tribes make it in small quantities. The *guaraná*-shrub‡ grows wild in the forests between the Tapajós and the Madeira ; but the Maués cultivate it about

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\* I had this from an eye-witness.

† The Bolivians also receive large quantities by way of the Madeira.

‡ *Paulinia sorbilis*.

their houses, on the rich black land, where it bears well in three or four years. The fruit is best gathered in November; it has an outer shell, containing pulp and seeds, the latter in cases of their own. This outer shell is removed, and the seeds are washed and dried in the sun; the inner shell is then beaten off, and the seeds are reduced to fine powder in a wooden mortar. Water is added, twelve or fourteen spoonfuls to a pound of the seeds, and the whole is kneaded into a thick dough and formed into long rolls; these are dried in the hot sunshine or over a fire. The cakes so formed are very much like chocolate in appearance. Sometimes the Indians make them in the forms of different fishes, birds, turtles, etc., or canes ornamented with leaves; the imitations are really very clever, showing more artistic skill than these people have credit for.

In the fruiting season, each person can prepare from one hundred and fifty to three hundred pounds of guaraná.\* About seventy-five cents per pound is paid for it in the Maués country, and ninety cents at Pará; in Matto Grosso it commands a high price. There, and in Bolivia, guaraná is used as a substitute for tea; it is grated from the rolls as required, and dissolved in cold water. The Indians themselves use it in large quantities, as a preventive of fevers. It has been introduced into our own materia medica, being employed to especial advantage in headaches and disorders of the stomach. It might be used in place of quinine, for intermittent fevers.

The Tapajós is about twelve hundred miles long, but its size has been greatly overrated; at the lower falls it is hardly half a mile wide, and not very deep. All this broad lower

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\* Penna. A Região Occidental da Provincia do Pará, p. 201.

course is, then, simply a lake, through which the river flows ; the current is barely perceptible. In the dry season the tides are felt even to Itaituba, and Mr. Bates observed them on a branch of the Cupary, far above its mouth. The river cannot fill up this lake, because it brings down no mud from the clean rocks and sand above. The sand does come down in pretty large quantities, and it has formed the islands between Itaituba and Aveiros. As we descend in the little steamboat Inca, the captain points out sand-shallows here and there ; the navigable channel zigzags across the lake, growing deeper and deeper toward Santarem. It is well for us to remember these features of the Tapajós ; we must return to the river by and by.

## CHAPTER IX.

### THE NORTH SHORE.

**A**T eight o'clock in the evening, we pass from the black Tapajós to the clay-stained Amazons: the dividing-line plainly visible, even in the pale moonlight. Our Indian paddlers pause for a moment, and cross themselves devoutly; looking back, we can just see glinting lights at Santarem; a few low bushes and dark patches of grass mark the junction of the two rivers, and there is a shallow extending far below this point. The night is calm and pleasant, but driving clouds across the moon portend a high wind for to-morrow. With coats buttoned tightly under our chins, we sit before the little thatched cabin, silent, because the scene and the time tend to silence; the men handle their paddles quickly but almost noiselessly, keeping us in the middle current. After awhile they start a wild melody, half song, half chant; the steersman improvising a line or two, and the others joining in the chorus, keeping time to the dip of their paddles:

“Oh! when shall I come to my own land?”

sings João. He tells of his mother, weeping there for him; of his sister, whose eyes are as bright as stars, whose voice is as sweet and sad as the song of the *caráchui*: “When shall I see you?” he cries; “When shall I come to my own land

and be at rest?" Then follows the chorus, long drawn, moaning :

"*Lei, lei, lei, cura lei, Maria lei-ú.*" \*

The paddles fall in perfect unison, a part of the song and the silence.

After an hour, we reach the point of *Urubícuacá*, where two great channels of the Amazons unite at the lower end of *Ilha Grande de Santarem*. We have been descending the southern branch ; here we leave it and begin to ascend the northern one, keeping close to the shore now, to take advantage of the still water. This north and south channel, rather less than the other, is called, for distinction, the *Amazonas de Paracary*, or sometimes *Amazonas d'Alenquer*, or again *Urubícuacá*, from the point. The canoemen always indicate divisions of the river, but the names are not well fixed.

The moon is hidden and the wind is rising ; thousands of mosquitoes gather about the canoe, lighting on our faces, fifty at a time, flying into our eyes, mouths, ears, piping derision at our feeble warfare, though we kill a dozen at a slap. We wish that the moon would come back ; that the wind would blow a tempest, to sweep them away. The men slap their bare feet at every pull, but keep to their work good-naturedly. We crawl on, slowly enough, with the wind almost dead against us, and the current in-shore nearly two miles an hour. One is cramped and restless in a canoe, at best ; we are tired and sleepy, and the mosquitoes are torturing, and the quiet evening is forgotten. So it goes with river-life.

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\* I give this chorus just as I heard it : a common one among the canoemen. The word *Maria* may indicate its origin in some hymn ; but the words are neither Portuguese nor Tupí, and the men could not translate.



At two o'clock in the morning, the wind is blowing stronger than ever, and we are almost at a standstill. We see a house on the shore: deserted dwelling of some cacáo-planter, who comes here only in the fruiting season. Further progress being out of the question, we land, and force open the wooden door with some difficulty, scrambling in and shutting it as quickly as possible, to bar out the mosquitoes. Enough have entered to make us thoroughly uncomfortable for the rest of the night, and more are coming through crevices of the palm-thatch above. We grope about in the darkness, until we find places to tie our hammocks; then we cover our faces and hands, as well as we can, and sleep and toss alternately until morning. How we long for the clean sand-beaches of the Tapajós, where mosquitoes are almost unknown! But, at all events, the Amazons is a healthy river, and decidedly the Tapajós is not.

In the morning the prospect is grand, but most discouraging. Great, yellow waves are rolling down the river; wind dead ahead still, and blowing a gale. Our canoe, sheltered behind a half-sunken log, is tossing about like a cork; João has never left it all night, and it is well that he did not, for twice it was near getting adrift. The men positively refuse to venture out until the wind abates; so we make the best of our situation, and pick up what enjoyment we can from the desolate surroundings. We are on a patch of dry land, just raised above the low tract behind. An impassable strip of swampy forest extends along the shore on either side. We wander a little way back over the meadows, but are stopped by muddy pools and thickets of mimosas and caladiums. So we are reduced to the house and the cacáo-plantation; the former is a mere hut, with clay walls and rotten palm-leaf thatch; the orchard contains

about forty trees, sickly looking, for the place is too low for successful planting. On the opposite shore, two or three miles away, there are extensive *cacodés*, and many inhabited houses. The whole region, as far as we can see, is low *varzea*; this island, on which we are penned (Ilha Grande de Santarem), is a triangle, twenty miles long or more, and nearly as broad at the base; two-thirds of the surface is



Cacáo-orchard.

broken up by shallow lakes. From the river you see nothing of this; there is only a long band of forest skirting the shore, and clay banks cut down sharply to the water.

By noon the wind has abated, and we are off again; crossing now to the opposite side, and following the shore of another great *varzea*-patch, called *Tapará*. The forest extends quite back to the centre of this island; along the

raised border there is a continuous line of cacáo-orchards, with houses here and there, half-buried among the trees. After three hours of hard paddling, we reach the end of Tapará, and cross the channel that divides it from the mainland; here at length we find the northern terra firme, a low, rocky point, known as the *Barreiras de Paracary*. The point extends so far into the river that the width of the latter is reduced to little more than half a mile; beyond this again, there is a wide reach, where two great channels meet. The main river is fifteen miles away, on the other side of Ilha Grande de Santarem; but even this lesser portion must crowd hard to get through such a narrow gate. The surface boils and seethes, and rushes on like a mill-race. Just opposite the point there is a sudden deepening of the bed, and the water spins down to it in a great whirlpool—terror of the canoemen. In the flood-season there would be no passing on this side; then canoes keep close to the opposite shore, and even steamboats avoid this dangerous *caldeirão*. More than one boat has been lost in it; great *cedro* logs, floating down the current, are whirled under, and only reappear three or four miles below. But the river is low now, and there is little danger if we keep out of the main current; only we have much ado to get around the point with three paddlers, so strong is the rush of water. The men tell of other *caldeirões*\* along the river; wherever the channel is narrowed and deepened, these whirlpools are formed. There are fearful stories connected with them, and many of wonderful escapes from their ravenous jaws.

Above the *caldeirões* we have one of those river-views that give an idea of the grandeur of this water-system. To

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\* Great caldrons. A most expressive name.

the south and southeast there are two open horizons, separated by the island of Tapará; to the west, another great reach of sky and water, with half a dozen islands in view; to the north, a broad current, sweeping around the *Ilha das Barreiras*, and receiving a good-sized river, the Curuá, before it joins the other channel.\* We are in a great bend of the Amazonas de Paracary, where it passes around Ilha Grande de Santarem; the northern terra firme forms a corresponding bend, but a still stronger one, culminating at this point of the Barreiras, where it reaches the river; to the north of the point there is left a great bend of alluvial land, with two or three lakes between the terra firme and the Amazons.

The lakes are hidden by a border-line of forest; to reach them we turn into a narrow igarapé, where the branches meet overhead in a glorious arch of soft green. The sun is low by this time; we see its lights on the leaves above, but the water flows darkly beneath, and the forest on either side is all in shade. The igarapé is not more than half a mile long. Emerging from the forest, we turn first through a bright meadow, and then into Lake Paracary,† where we must find our way yet through floating grass-patches, and shallows reaching half-way across. The lake extends seven or eight miles, north and south; low terra firme comes down to the eastern shore in a gently shelving sand-beach, with two little hills beyond. A few palm-thatched houses are scattered along the beach; this is the settlement of Paracary, if settlement it can be called when the dwellings are often a

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\* All this is very confusing in description, but so is it confusing to one who sees it for the first time. You get only the idea of an archipelago in a great sea of muddy water.

† Named from an herb found here (*Peltodons rudicans*), reputed a remedy for snake-bites and scorpion-stings.

mile apart. We land, and walk up to one of these houses ; the owner, a white man, clad in shirt and drawers, comes to meet us at the door, and very cordially invites us to enter and lounge in the hammocks while coffee is prepared. We explain that we have come to explore the country beyond Paracary ; meanwhile we are seeking a shelter for the night. On this, our host immediately places his house and self at



José's Family

our disposal ; the luggage is ordered up from the canoe, and our hammocks are swung in one of the two rooms ; thus, without introduction and without a hint of payment, we are made welcome to all that the place affords.

He is a lazy, good-natured, thriftless fellow, this José da Costa ; living here with an Indian mistress and a flock of

children, who are fed and clothed, God knows how. They have their little plantations of mandioca in the forest, five or six miles away, and José and his son go on fishing excursions now and then; but I fancy that our supper comes from his brother's house near by. Never mind; it will cost him nothing, and he is glad in his heart to have a visitor. We get bowls of warm, sweetened milk after supper, and a hard biscuit that José has saved in his trunk; at sunset the children come for our blessings, and kiss their hands gravely; the older people say "good-night" all around, and then go on talking. "Light the gentleman's cigarette," commands José; one of the little girls takes it from my fingers, and lights it at the open fire with two or three whiffs from her own pretty mouth. We smoke and chat until nine o'clock, or thereabouts; the doors shut to keep out roving mosquitoes, but plenty of fresh air comes in through the thatch. In the darkness we can only see José's pipe moving back and forth as he swings in his hammock. It goes out at length, and we go to sleep.

Nearly all the Paracary people are whites; farmers in the smallest way, or herdsmen with twenty or thirty head of cattle; one or two only have more extensive possessions, and do a little trading besides. Their hospitality is as unbounded as their poverty. "Come in, come in," calls one; "rest yourself in the hammock there; it is warm walking over the sands." So we lounge until coffee is brought to us—the host apologizing that he has nothing else to offer. "But go, my wife; see if there is not something for the gentlemen." She searches the house, and returns presently with a little calabash of honey. "Can you eat wild honey? Go, my daughter, bring some mandioca-meal to mix with it." While she is gone he tells of a tree that he found in the campo, full of

little sacks, from which he filled half a dozen great bottles. He discourses learnedly of bees ; half a dozen kinds he knows that make excellent honey, and others that are less valuable.\* We can attest to the goodness of this which the daughter brings in : little plates neatly set out on a white cloth, with a bowl of mandioca-meal by the side. The wife stands by disconsolately. " Now, if we but had some bread for the gentlemen ; but come to-morrow, and we can at least give you some sweet milk ; you should drink some now, but the cows are strayed ; and will you have another cup of coffee before you go ? Run, Joanna, put the coffee-pot on the fire." And so on, and so on, as long as we care to stay. Time has so little value here that the people never think of its possible value to a stranger.

There are beautiful walks along the lake shore : a wide, sandy slope everywhere, with tufts of short grass and groves of javary palms,† pride of every sand-beach ; besides these, a few trees that are found only in such situations : spreading species, with splendid crowns of thick, dark leaves. Twenty yards farther up the slope there is a little belt of forest, following the curves of the shores and streams that flow into the lake. Most of the trees here are like those of the main forest, some are campo species, and a few are peculiar. Still farther on there is a great tract of sandy campo, precisely like that about Santarem, and altogether different from the forest ; it is the western end of a long strip of similar land, which extends, with slight interruptions, almost to the Atlantic. Mounted on the little, wiry, gray horses, we could gallop across to the river Mãecurú in three or four hours ; there we would have low varzea lands and two or three channels to

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\* Various species of *Melipona*, probably.

† *Astrocaryum javary*.

cross, but beyond, the road is clear to Monte Alegre and Prainha. The campos extend only ten or twelve miles inland, at most; farther north, in the forests, there are other open tracts, but unlike these in that they are stony and have but few trees. All this northern region, you remember, is modified by the Guiana mountains. Even at Paracary their influence is felt in the sunny skies and less abundant rains.

Wandering over the sandy campos, we almost forget that we are in the Amazons valley. Here the trees are scattered thickly over the surface, or gathered in little clumps, with bushes about their roots. They are low and spreading and crooked; rough-barked for the most part, and blackened by the yearly fires of the herdsmen. We notice that nearly all of them are inclined a little toward the west, probably because of the constant east winds. Clumps of short, wiry grass grow about the sand: *capim branco* (white grass), *rabo de rapouso* (fox-tail), and so on; but nothing like the rich velvet of the lowland meadows. The landscape always reminds me of an old, neglected orchard, where the trees have been left unpruned for years, and bushes and weeds have sprung up about their roots.

In the dry season, the branches are thinly leaved and dusty, and the grass-tufts have dried up. The sun beats down over bare, white sand, until the air quivers with its heat, and every half-dried leaf droops on its stem, and the scorched land seems given up to desolation. But with the first heavy rains of January the trees put on a new mantle of soft green; fresh young grass springs up over the sands; the east wind blows merrily, and the sunlight comes warm with life, and the campos are desolate no longer. Then the herds are driven up from their lowland pastures, where the floods are covering everything; the herdsmen gallop



across the plain from morning till night, dodging the tree-clumps, stooping to pass under low branches, shouting to their spunky little horses, who enjoy the fun as much as they do. No wonder that the herdsmen love their glorious, roving life, and the clear, healthy air of these campos!

The plants here are entirely different from those of the forest, and the species are very numerous. There are *cajú* trees,\* with bright yellow, pear-shaped fruits, full of a sour, refreshing juice. On the end of each one, opposite the stem, there is a bean-shaped seed, which serves as a handle while you eat the pulp, and which is eaten itself when roasted, tasting something like a peanut; but beware how you bite the raw bean, for it is full of acrid juice, which is a strong poison besides. In August and September great numbers of the fruits are gathered and made into excellent wine, much prized for its medicinal qualities.† There are a few other edible fruits on the campos, and some medicinal species; certain trees yield excellent tan-bark, or gums, or resins, but only a few are good for timber, and these are too small to be of much value.

We find no palms on the campo, except in rocky places and along the campo hills; there the pretty *jatá*‡ and low spreading *pindaba*§ grow abundantly, with cacti, and sword-leaved bromelias; but for the rest, the vegetation is very similar to that of the lower ground.

Even the animals of the sandy campo are peculiar. Deer and jaguars wander out from the forest, but they do not belong here. The campo has its own deer, *veado galheiro*,||

\* *Anacardium occidentale*. The West Indian name, cashew, must come from the same Tupí or Carib word.

† This, and the unfermented juice, are used in Brazil as antisypilitics.

‡ *Cyagrus cocoides*.

§ *Attalea*, sp.

|| *Mazama campestris*?

with branched horns ; whereas the forest species have short, straight horns, and belong to another genus. There are no monkeys on the campo, no wild hogs, nor pacas, nor cotias, nor ant-eaters, nor sloths, nor tapirs ; in the place of all these we find only the galheiro deer, and the queer little turtle-like armadillos,\* which are never found in the forest. We often see them running over the sands ; if alarmed, they scamper to the nearest hole, or burrow into the ground, disappearing in less time than you would imagine. The armadillos are eaten, often roasted in the scaly shell, and the flesh is very white and delicate ; but the strong, musky odor is an objection ; dogs, strange to say, will not touch it. Sometimes the young ones are tamed, and they make very amusing pets, poking their inquisitive noses into every crevice, and running about the house like dogs. There are scores of pretty campo birds : paroquets and finches, different, in the main, from the forest species ; and we see nothing of the toucans, and trogons, and *mutuns* of the woods. The green lizards, scuttling across our path, are true campo species ; the great black toads and little singing tree-frogs are distinct from those we see elsewhere ; and the whole army of insects is an army by itself, hardly any of the species like those of the thick woods.

The space occupied by these sandy campos is insignificant when compared to the forests around them. The question naturally arises : Why are the campos here ? Why should such little strips be cut out from the great sea of forest, and furnished with a fauna and flora of their own ? On the lowland we have seen that the plants and animals often resemble those of the highland forest very closely ; they belong to the

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\* *Priodonta gigas* ? *Tatusia*, sp. var.

same genera, and we can readily admit that they were produced, in course of time, by the adaptation of highland species to the river-plain. We might suppose that the campo fauna and flora were produced, in the same way, from those of the forest; but here the differences are too striking to admit of such a supposition. Besides, the forest and the campo occupy precisely the same sandy ground, with a substratum of yellow clay. The campo soil is drier, because it is more exposed to the sun; but there is no difference of level. Here at Paracary, and at Santarem, we see the forest rising like a wall from the open campo; the ground is neither higher nor lower, and the soil, for a long distance on either side of the dividing-line, is precisely the same. Why, then, should there be a campo vegetation? Why does not the forest cover all?

On the Tapajós we saw how the strips of campo-land were continued southward, and might be looked upon as fragments of the great *campinas* of the upper river, and the still more extensive plains of Central Brazil. In fact, campos very much like these occupy an immense region in the provinces of Ceará, Piauí, Pernambuco, Bahia, and westward into Goyaz and Matto Grosso. There are the same plants, or closely allied species: *cajús*, and broad-leaved *mafuás*, and so on; the same animals: armadillos, and deer with branched horns, and paroquets, and lizards, and insects; and this on a soil which differs more from that of the Amazonian campo, than the latter does from the forest.

The sandy campos are isolated strips, generally near the rivers. We could imagine that the Tapajós tracts were produced from seeds, floated down from Matto Grosso; but that theory would not account for these tracts on the northern shore of the Amazons. And besides, we can hardly suppose

that the stunted campo trees would drive out the thick, luxuriant forest-growth. We are, then, driven to one conclusion. The campos are the remnants of an older fauna and flora, which once covered all this region of the Lower Amazon, and extended southward to the open plains of Piauhy and Goyaz. Gradually the forest advanced from the west and north, encroaching on this ground, blotting it out entirely in most places; the lower lands, near the rivers, were last covered, because they were drier and more sandy, and thus better able to resist the forest; but it is extending over them also; very slowly, because the forest-trees will only germinate in the shade; the hot campo speedily kills them. In low places, by streams and along the river-shore, the forest often gets a footing, and from these points it spreads back to the other advancing host.

Just as, with islands long separated from a continent, the species have undergone a general change: so here on the Amazonian campo, we must look for distinct species from those of the southern plains; but they will often be closely allied, true representative forms. It is certain that there are such forms, but they must be carefully studied and compared before we can generalize on them. Besides, it is natural to suppose that some of the campo-trees were derived from those of the forest, and there are, indeed, a few campo species which have close representatives in the woods; but this does not affect the general theory at all. I give it as it has forced itself upon my own mind; if a better explanation can be found, so much the worse for my theory, for it must go under as fifty other theories have done.

These campos of Paracary are unfit for cultivation;\* the

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\* The annual burning of the grass makes them worse, and no doubt retards the advance of the forest.

forest to the north is little better along its edge ; only two or three miles within the line the soil has a sufficient admixture of leaf-mould for mandioca and corn, and in some places there is rich black land, with ancient pottery like that along the Tapajós and at Taperinha. José's mandioca-plantation is at one of these black-land localities, six miles from the lake-shore ; and thither the whole family goes one morning, we riding with José in a great, clumsy, wooden-wheeled ox-cart, the squeaking of which may be heard a mile away. The children have gone ahead in another cart, and its music is dying away in the distance. We linger behind, alighting now and then to examine the campo trees, or chase after some beetle or butterfly. At this season we cannot find many insects here ; later, during the rains, there are many beautiful species, though they are never so abundant as in the forest. Our finest prize to-day is a large cetonian beetle, all glittering with metallic blue and gold ; we have seen nothing like him in the forest, but he has cousins on the southern plains. Now and then we see an immense black wasp flying over the sand, and smaller species with prettily colored wings, purple and white. José calls them *caçadores*,\* hunters, and they merit the name, for they are always peering and hunting after spiders, wherewith their nests are provisioned. Perhaps some of them carry off the great *Mygales*, whose holes are abundant in many places : hairy species, with bodies two inches long, and legs spreading over five or six inches. Some of the little spiders are much more interesting than these giants ; one that we find, is not much bigger than a pin's head, but its nest is quite a wonder of insect architecture. It has only three lines in a forked twig ; two of these

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\* Generally large Pompilidæ.

are used to strengthen the third line, on which are three little balls; the upper and lower balls are bits of rubbish, wound with silk; the middle one is a hollow cone, attached by the apex, and with a hinged door forming the base; our spider sits inside of the cone and holds the door closed. The whole arrangement appears simply like stray threads of silk and rubbish, such as you will find about any bush; no doubt the unwary flies see nothing more in it, and so fall a prey to their concealed enemy.

Three or four miles of this campo-road brings us to the forest. It is not as high and matted as that of Panéma and Taperinha, but there is enough to arch over the road, eighty feet above our heads, and we can hardly see twenty yards among the tree-trunks on either side. There are plenty of wild animals here; we find jaguar-tracks following the road for a long distance, and José points out places where they show plainly over the tracks of the cart which precedes us; the jaguar must have passed within half an hour. Perhaps our creaking wheels frightened him away; at any rate, we see nothing of him, nor of any other animal larger than a cotia; in an hour we reach the little settlement of Terrapreta—a dozen thatched huts, with clearings here and there, and a great, swampy grass-plot in the centre. We turn off to José's farmhouse; rather a better one than the others. The children, arrived an hour before, come for our blessings; the tired oxen are turned out to graze, and we sit down to our breakfast of fish and mandioca-meal, spread on a mat in lieu of a table.

The black land in this vicinity gives excellent crops of mandioca and corn, and a little sugar-cane; but the farmers have a most uncompromising enemy in the *saiüba* ants.\*

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\* *Ecodoma cephalotes*.

We have seen these at Pará and Santarem,—large, reddish-brown ants, forever walking in lines through the forest, each one with a fragment of leaf in its jaws. What they use the leaves for, is a question. Mr. Bates supposes that they thatch their houses with them, and very likely he is right. Be that as it may, the ants very commonly choose the leaves of cultivated plants; they will strip a mandioca-bush, or even an orange tree, in a day or two: workers in the branches clipping off fragments half an inch square, and dropping them down to their fellows below, who seize them and march off in files often an eighth of a mile long, presenting a most singular appearance; you hardly see the ants at all under their loads. Where the saübas are numerous, they are terrible pests; José complains that his mandioca field is half spoiled, and the others around are as bad. In many places we find *taperchá*-branches\* thrown here and there to protect the plantations; the ants are said to take their leaves in preference to those of the mandioca. These Saübas are wonderful engineers; everywhere we find their roads through the forest and about the clearings; tracks two inches broad, quite free from leaves and sticks, and keeping a generally straight course, often for half a mile or more. They all lead at length to the central dwelling or village, where the red substratum has been mined away and brought to the surface, forming mounds two or three feet high and often fifty feet across. Besides these overground roads, there are tunnels leading from the hill; how far it is impossible to say, but Mr. Bates records this:

“In the Botanic Gardens at Pará, an enterprising French gardener tried all he could think of to extirpate the saübas. With this object he

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\* *Spondias*, sp.

made fires over some of the main entrances to their colonies, and blew the fumes of sulphur down the galleries by means of bellows. I saw the smoke issue from a great number of outlets, one of which was seventy yards distant from the place where the bellows were used." \*

The farmers sometimes bury dead fish or other offensive matter in their nests ; and this, it is said, will drive them away. In Southern Brazil, certain drugs are used in the same manner.

One day, after a rain, we find the winged females of the saüba issuing from their nests by thousands : fat-bodied insects, as large as a hornet, and not unlike a red wasp in appearance. Now the birds hold high festival ; toads and lizards and monkeys are on the alert ; and the helpless saübas fall an easy prey to their greedy enemies. José's Indian woman is out with a calabash-jug, gathering them by handfuls. In half an hour she is back, and the calabash goes over the fire, until the ants are killed and slightly roasted ; then she stirs the mass well, to shake off the wings, adds a little salt, and smilingly places a bowl of roast saübas before us. Well, it is a dish worth tasting, you may be sure. You take the ants delicately by their heads, and bite off the fat bodies ; they taste a little like shrimps, but are far superior, to my thinking. Why not ? We eat oysters, and lobsters, and turtles ; for aught I know, we may eat sea-anemones and caterpillars some day. It is merely a matter of education.

Besides the saüba, there are other insect pests at Terra-preta. While we are geologizing on the little campos,†

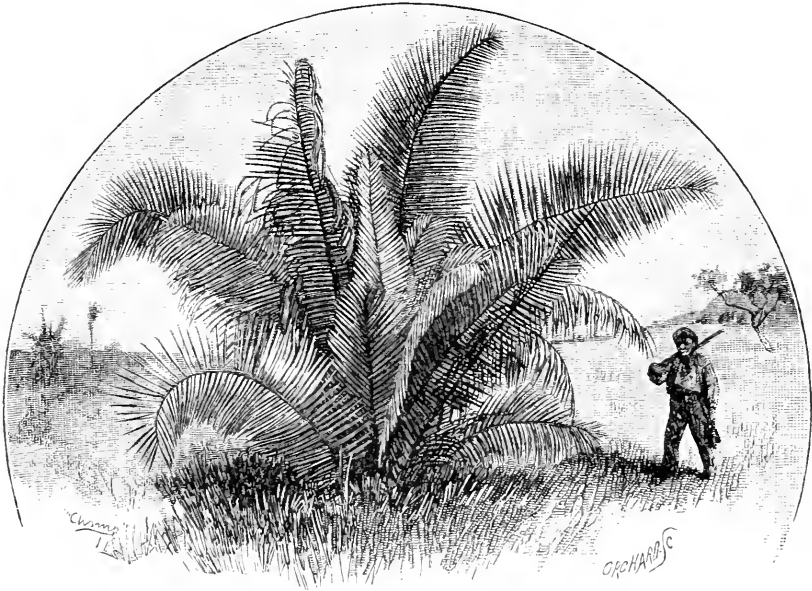
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\* Naturalist on the Amazons, p. 14.

† These are not sandy campos, but stony tracts in the woods, where trees cannot grow.



near by, a minute black bee\* flies in swarms about our faces, crawling into our nostrils and eyes, and fairly driving us from our work by its fussing, though it does not sting.



Thatch-palm on the Campo at Terra-preta.

If we rest in the house during the hot hours, we are tortured by the *motuca* fly,† a large, bronzed species, which lights on us everywhere, and runs in its lancet-like beak. The houses, also, are overrun by brown wasps, which are peaceable enough, it is true, if one can avoid stumbling against their nests. José attacks them, now and then, with a long pole, but it does little good. One half-ruined house, near by, is filled with the nests, so that hardly a square inch is left uncovered, and the wasps fly in and out like a swarm of bees.

Happily, none of these pests disturb us after sunset; then the great, open kitchen-shed is cleared, and the three large stones that form the fireplace are piled over with dry wood,

\* *Melipona*, sp.

† *Hadrus lepidotus*.

to give a strong blaze ; José takes his wire-stringed guitar, and some neighbor comes in with a fiddle, and the young people improvise a rustic dance, José's two pretty daughters taking part very gracefully, though they are barefooted and dressed in calico. Songs and stories fill out the evening ; a bit of sociable country life that we shall see very often in our travels.

From Terra-preta we explore the country to the north, where there are little lakes communicating with the river Mãecurú. There is nothing remarkable about the lakes, which are much like those of the Amazonian varzea ; only these are more secluded, with woods all around, and rocky terra firme coming down to the shore. The flood-plain of the Mãecurú forms long, crooked projections, wherever a stream flows in from the sides ; and along the course of these streams the lakes lie, here and there. The most of them cannot be reached from the river, for the outlets are through impassable thickets and grass patches. The fishermen have little narrow paths through the woods, leading to Lake Turará, and one or two others ; but they rarely traverse them.

We pick up geological notes very slowly, as one must do in a forest country ; with these, and our insect collections, and some stone axes and pottery from the black land, we are content to leave Terra-preta, riding back with José on his ox-cart. On a moonlight evening we pass over the campo, and José sings ballads and tells stories until we wish that the road were twice as long.

Paracary is one of a whole system of lakes that lie close against this northern terra firme, sometimes almost surrounded by it, and communicating with each other, or with the Amazons, by crooked little igarapés. At this season, the

current in these igarapés is almost always from the Amazons, although the lakes themselves receive water through numerous small streams. I suppose that the evaporation, over such large surfaces of shallow water, is enough to compensate for the inflow. Lake Paracary, the largest of the series, is only five or six feet deep in the dry season; but there are at least fifteen square miles of water-surface included in it; with the hot suns and constant rains, the evaporation here must be very great.

Lake Curicaca lies a little to the northeast of Paracary, and the meadows between can be passed in canoes during the floods; but the waters are low yet, so we set out to walk the six or eight miles from José's house, along the lake-shores. Here and there, where streams come in, there are deep inlets barring our way, but we always find some fisherman to set us across in his canoe; for the rest, it is right pleasant, walking over the clean sands, by groves of javary palms and beautiful shore woods. The white herons\* are gathered in flocks about the shallows; pretty little *maréca* ducks† swim over the lake in great bands, or waddle tamely on the shore, always in files like soldiers; now and then we see a clumsy capibara wading through the grass patches and hardly noticing us as we pass. The water sparkles brightly, and the grass waves, and the palm-trees are rustling overhead; so joy and health live by the lakes. Do you wonder that the poor people love them? Here is Bernardo, whose riches are comprised in his little thatched hut, and a wooden canoe, and a tiny plantation back in the forest. Well, he might find more fertile land elsewhere; there are saübas here that strip his mandioca field; his live stock consists of a few

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\* *Ardea candidissima*.† *Anas autumnalis*.

chickens and half a dozen sorry sheep, with the wool hung on in scanty bunches, as is the fashion with their kind under the Equator. But Bernardo is happy, and hospitable, too, in his poverty; he will not hear of our leaving his house until we have eaten dinner with him; so one of the chickens is killed, and, while it is cooking, we lounge in the clean hammocks, amusing ourselves with the plump, four-year-old little girl, who comes to us quite readily, but goes away again directly to put on a tattered dress over her brown skin. When we came, she had nothing on but a pretty necklace made of wild beans; I am admiring this, when the child, at her father's order, takes it off willingly and puts it into my hand. It happens that I have some blue and red glass beads in my pack, and I fill the little one's hands with these; she, who has never possessed such a treasure, knows not what to do, between her Indian nature that would keep silent, and the white, that would burst forth in laughter and talk; as it is, she hugs the beads close, and looks in my face with a heavenly smile, and so goes away to enjoy her happiness in the corner. Five cents' worth of beads: ten dollars' worth of happiness; more, for Bernardo and his Indian wife are pleased, as well as the child; she exhausts her simple art on our dinner, and he volunteers to walk on with us, three miles yet, to show the path.\*

Lake Curicaca† is little more than a mile long, and half as

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\* Poor Bernardo! Six months afterward, when I was in Santarem, some one came to me with a scrawled paper, begging charity for a dying man, "for the love of God." I went with the petitioner to a little, half-ruined house, where I found Bernardo's Indian wife, and the child staring fearfully with her great eyes at a form on the ground; a still form, with a white cloth thrown over it, and two little candles burning near; all that was left of my old host. He was taken sick at Paracary, and had come here to be confessed, and so died just before I came to the house.

† *Curicaca*, a bird, *Ibis melanopis*.

wide ; at the northern end it receives a little sluggish stream, or rather a row of pools, passing through a long stretch of varzea meadow. The meadow is a bay of lowland, reaching two miles or more into the terra firme ; we might call it the flood-plain of the stream itself, but it is a mile wide toward the lake, while the stream is hardly five yards across. All along the northern shore we shall find these varzea bays, wherever a stream flows down ; consequently, the dividing-line between the varzea and terra firme is extremely irregular ; in some places, indeed, this irregularity is so great that peninsulas of the highland stretch far into the meadows, and are even cut off entirely. These forms are not without a theoretical significance, as we shall see by and by ; practically, the varzea bays form excellent pastures, and along the shores the poor people have built their houses, within easy range of their fishing places on the lakes, and yet near their highland plantations of mandioca.

The settlement of Curicaca consists of some twenty thatched houses, scattered along either side of the varzea bay. There are no sandy campos, as at Paracary ; the forest edge marks the limit of highest water during the floods, and the houses are built just within it. Generally, they are hidden from the lake and the meadow. Except for the cattle, the landscape is what it has been for a thousand years past, and what it will be, perhaps a thousand years hence. The Indian people in the houses are hardly more changed ; they speak Portuguese instead of Tupí, and their brown skins are covered with coarse clothes ; but the customs, implements, manner of living, character even, are almost the same as those of their wild ancestors.

Graciano, our host, is a young fellow who settled here five or six years ago, and is living as the Indians do, satisfied

with his day's supply of fish and mandioca, and taking small heed for the morrow. He has a pretty young wife, and a six-year-old little girl; the wife cooks his meals, digs mandioca roots from the clearing half a mile away, and prepares farinha from them; in short, takes all the labors of the house and field. He fishes, or hunts, or makes a new clearing when it is required; works a little for the traders, now and then; rarely goes twenty miles from Curicaca, and does not seek to better his lot, which, after all, is the happiest for an Indian. His hospitality is willing, but not excessive; he considers our presence an honor to his house, but leaves to us the question of payment, which a white man, in most cases, would refuse altogether. There is only one room in the house; the best corners are assigned to us, and the best mats are spread down under our hammocks. Graciano promises to fish for us every day; but he explains that they have no coffee and sugar, so we order these necessary articles from Alenquer by the first canoe. For board, lodging and washing, we agree to pay five hundred reis—about twenty cents—per day, with which Graciano is abundantly satisfied.

From the first, he looks upon himself as a servant; no well-bred Indian thinks of holding himself on an equality with a white who has any money. When our meals are ready, he spreads a mat on the ground, with plates for us, but none for himself; then he stands ready with a calabash of water and a towel, that we may wash our hands before eating. Northern peasants might smile at our fare. A bowl of fish, and another bowl with *caldo*, the water in which the fish was boiled; a calabash of mandioca-meal; a plate with red peppers and salt and limes. The mandioca is soaked with *caldo*, and the fish is eaten with our fingers, for Graciano has no forks. Well, there is an appetite, better for seasoning than

the peppers and limes; and after dinner the cups of black coffee are delicious. If José or his neighbors bring us a present of game, so much the better; it is roasted over the open fire, with all the juices in, as no French cook could do it: or is it the air, and our day's tramp through the woods? Fresh air we have, outdoors and in, for the palm-thatched sides are full of holes. The floor is of native earth; it, and the cleared space before the house, are swept neatly every day; and Graciano and his wife are as clean as water can keep them. What does it matter that both are barefooted; that Graciano is dressed in coarse white cotton, and that his wife has nothing better than a calico gown?

There is another Indian settlement in the forest, two miles north of Graciano's house. There the sluggish igarapé of the lowland meadow is a running stream; farther north still, we find only the dry, rocky bed, passing through low woods, with urucury\* palms and soap-berry trees;† the fruits of the latter are said to take the place of soap for washing, but, if they are so used, it must be very rarely; the Curicaca Indians always employ the strong, black cacáo soap. The tree seems to be characteristic of low terra firme forests. \* In other places along the stream there are strips of still lower, alluvial land, where the urucurys grow more abundantly, with the spiny murumurú; ‡ such ground is sometimes called *varzeada*, to distinguish it from true Amazonian varzea on the one hand, and rocky terra firme on the other.

Exploring the forest here, we constantly meet with signs of wild animals: tapirs, wild hogs, deer, and jaguars; in wet places, near pools, the whole surface is broken up with their tracks, as you will see the ground in a cattle-yard. One day

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\* *Attalea excelsa*.

† *Sapindus*, sp.

‡ *Astrocaryum murumurú*.

we find a deer lying by the path, quite dead, but still warm ; four or five scratches on the shoulder show where it was struck by a jaguar's paw. Probably our footsteps frightened the marauder away as he was about to make a meal from his victim. Graciano slings the deer to a tree, and in due time carries it home.

There is an old, abandoned trail, following this dry bed of the Curicaca igarapé at first, and thence leading nearly due north, sixteen or eighteen miles, to Lake Cujubim.\* The lake is one of those communicating with the river Mãecurú ; the Indians go there to fish sometimes, but by another path, from Terra-preta. However, it suits our purpose better to follow the old trail ; with some difficulty we persuade Graciano to go with us as a guide ; so we leave the house one morning, carrying provisions for three days, and a calabash of water.

It is a hard tramp, and a long one. The forest is tangled beyond anything we have seen, and here and there it is interrupted by meadows, which are worse yet, for the grass is higher than our heads, and so matted that we have to cut our way through with a knife ; occasionally we meet with clumps of sword-grass, which leave hard marks on our clothing and skins ; Graciano's bare feet suffer terribly. The meadows cause long delays also, because in crossing them we are sure to lose the trail, and our only means of finding it is by the branches and vines, cut here and there ; no easy task in such forest as this, where the cutting was done perhaps five years ago. However, we blunder on somehow until near sunset, when we lose our way altogether, and are forced to go into camp most uncomfortably, with only dry salt-fish and man-

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\* *Cujubim*, a bird, Penelope, sp.



dioca-meal for supper, and the last of our water to wash it down. In the morning we hunt two hours longer for the trail without finding it, and then strike off at random through the woods, only keeping a general northerly course; by good luck we stumble into the right way again, and so at length reach the lake, thoroughly tired out, to be sure, but with that healthy weariness that comes from open-air labor.

It is a pretty sheet of water, not more than a mile long, and with low terra firme coming down to the shore on the southern side, where there is an old, deserted hut. To the west, there is a great stretch of meadow; to the east, the lake has its outlook to the Mãecurú, by an impassable, tangled igarapé, full of logs and grass. The land in this direction is alluvial, and covered with thickets of spiny bamboos; on the northern side there is more alluvial land, with swampy forest and bamboo thickets as far as anybody has penetrated. Graciano speaks of several lakes in this direction, but he has never visited them, and we can learn nothing beyond the mere fact or tradition of their existence. Our guide is more interested in the lake before us; he points out great fish stirring the water here and there. A dozen alligators are lying lazily along the surface, within easy pistol-shot, but by no means within shooting distance, for our balls rattle harmlessly against their skulls and bound off into the water. Of another class of lake inhabitants I have a too-severe reminder. Jumping into the water for a bath, I jump out again in two seconds, with a great gash in one of my toes; the water swarms with hungry cannibal fishes;\* *piranhas*, says Graciano, who was running down to the water to warn me. He binds up my foot with certain cooling leaves, and

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\* *Serrasalmo*, sp.

after that we are content with a shower-bath on shore. By way of revenge, we bait a hook with a bit of dried meat, which happens to be in our provision-bag; the instant we throw it in, it is gobbled up greedily, and our assailant, or one of its cousins, is drawn out, snapping savagely at our feet and fingers with its razor-like teeth. Graciano cuts off its head with his wood-knife, and a bit of this serves to bait for the next one; if the fish do not come fast enough, we stir the water vigorously with the pole, when a great rush is sure to follow. Ten minutes of this sanguinary sport leave some thirty piranhas on the bank; Graciano finds an earthen kettle in the hut, and our fish are speedily boiling for breakfast. Notwithstanding their carnivorous propensities, they are very good eating.

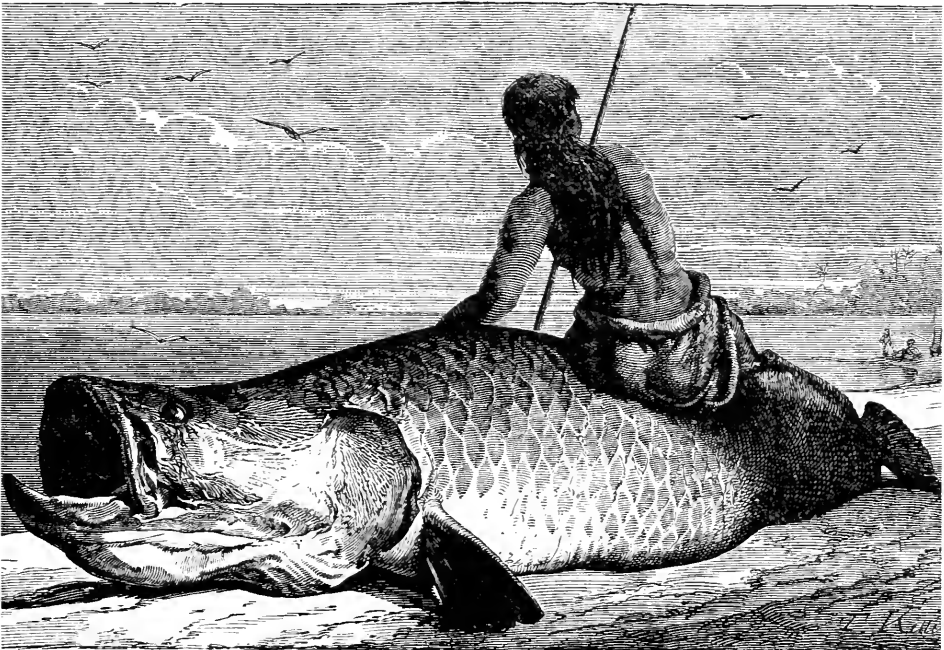
There are several species of these greedy piranhas; this kind is seldom more than ten inches long; but the *piranha-assú* is twice as large, and it makes nothing of biting an ounce or so of flesh from a bather's leg. People are sometimes killed by the piranhas; hence the Brazilians avoid swimming except where they know that the water is free from them. The fishermen say that piranhas gather in bands against the larger fish; crowding to the attack, they frequently bite each other by mistake; and the wounded ones are mercilessly set upon and devoured by their companions.\* Another dangerous fish of these lakes is the sting-ray, which lies flat on the bottom, the dark upper surface hardly visible over the mud and roily water. If left undis-

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\* The Tupí word *piranha* is said by Von Martius (Glossarios, sub voce) to be a contraction of *pirá-sainha*—i. e., toothed fish. The word was subsequently used by the Indians for a pair of scissors, comparing their cutting power, I suppose, to that of the fish; and from this, in turn, the name has been used to designate a fork-tailed swallow—i. e., scissors-bird.

turbed, the creature is harmless enough, but a careless wader may step on the flat body, and then the great, barbed sting inflicts a wound that benumbs the whole body, and makes the sufferer speechless with pain. I have known a man to be bed-ridden for three months after such a wound ; I have known others who were lamed for life.

Our geological gleanings at Cujubim are so promising that we return to the lake after some days, better prepared for a long stay. We find an Indian fisherman and his family, who have come in the interim, and are occupying the little



Pirarucú (From Keller.)

half-ruined hut. However, they readily give us a corner of it ; sleeping out of doors would be out of the question here, for the mosquitoes are numberless. They never disturb us during the day ; then we explore the lake and its tributary streams as far as we can for the bamboo thickets ; the fishermen, meanwhile, employing themselves in catching and

curing the great pirarucú,\* which abounds here, as it does in all the lowland lakes and channels. It feeds among the floating grass patches, in shallow water ; sometimes the fishermen watch for it there ; in the open lake one man paddles the canoe gently, while another, in the bow, stands ready to cast his harpoon at the fish as they come to the surface. Often he is unsuccessful ; if the two fishermen obtain four or five good fish in a day, they may consider themselves fortunate. Successful lake fisheries depend, first, on high floods, which allow the fish to come in from the river over the submerged lands, second, on low summer *vasantes*, which keep them confined to narrow limits, and in shallow water. When both of these fail, the fisheries are unproductive ; hence the price of dried pirarucú varies in different years from one dollar and a half to eight dollars the *arroba* of thirty-two pounds. As it happens, this is an unproductive year on the great lakes near the Amazons ; hence these Indians have come to out-of-the-way Lake Cujubim, where they have the whole harvest to themselves. Some fish that they bring in are seven or eight feet long, and will yield four arrobas of dried sides ; but these are less esteemed than the small, lean ones. The flesh is dried much as codfish is in Newfoundland. The sides are hung to a pole, and cut from above and below, so as to form wide, thin slices ; these are well rubbed with salt, and dried in the sun. The drying process is anything but appetizing ; generally the house is surrounded with unfragrant festoons, on which the flies are perched by thousands. At night these must all come in doors ; but for the perfect ventilation of the palm-thatch, the place would be uninhabitable. As for the dried fish, one eats it, at first, because there

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\* Sudis.

is no remedy ; yet in time we come to like it very well. It is the standard animal food of all the lower classes throughout the Amazons Valley. Fortunately for us, the Cujubim fishermen bring in plenty of delicate *tucunarés*\* and *caranauás*; species as large as shad, and quite as delicious. They spear these in the shallows, or catch them with lines ; nets are useless here, for the piranhas would bite them to pieces in a few minutes.



Igarapé de Cujubim.

Cujubim is fifteen miles beyond the northernmost settlement of this region ; but we would penetrate still farther, to find, if we can, those other lakes of which the Indians speak. There is a good-sized creek flowing in from the northern side, but it is impassable for a canoe, and the banks are covered with bamboo-thickets, so dense and spiny that the Indians can hardly be persuaded to enter them at all. At length we

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\* *Cichla temensis*.

bargain with a new-comer, who only agrees to go with us when we offer him three times the regular wages. It would be useless for us to attempt to make our way alone ; in any exploration of this kind, an Indian's instinct and woodcraft are worth far more than white intelligence. Our guide is a tall, middle-aged man, nicknamed *Abacate*, alligator-pear ; as is often the case, the nickname has entirely taken the place of the baptismal one ; Abacate he is to all his comrades, and Abacate he remains to us, for aught we know of any other appellation.

We carry only our blankets, with a change of clothing, and mandioca-meal for four days ; for the rest, we trust to Abacate's gun and our fishing-lines. So we start early one morning, crossing the lake in a canoe, and landing on the low ground near the mouth of the northern creek, which we propose to follow up. Here the bamboos are twenty or thirty feet high, very soft and pretty from the water, but once in the thickets we must pick and cut our way as best we can, constantly torn by the iron-like, branched spines ; they are like those of a honey locust, but stouter, and often six inches long. Our wood-knives have been well sharpened, but we speedily dull them on the hard bamboos ; the stems are so close together that often, when we have cut one, we cannot push it back among the others until we have hacked it into three or four pieces ; and this where arms and bodies are embarrassed in the narrow path. Barefooted Abacate picks his way with extreme caution, taking each step as a cat does, feeling the ground before he steps on it ; but, with all his care, he has to stop more than once to pick a spine from his foot. As for us, our clothes are torn, and our bodies are scratched in fifty places, but still we push on somehow ; at times the ground is clear for a little way, and we walk read-

ily over the clean, hard clay ; and again we may be an hour fighting our way through fifty yards of *tabocal*. Rarely we see an old knife-cut, mark of some former explorer ; but there is nothing like a continued trail. We keep the creek in sight, and so, about noon, come out to a little quiet lake or pond, such an one as you dream of, but do not often see, even on the Amazons. The surface, from one side to the other, is covered with beautiful aquatic plants, pontederias and lilies ; but we hardly notice these ; queen among them all, the *Victoria regia* spreads its great leaves on the placid water, and the air is heavy with the perfume of its flowers. We count more than a hundred superb ones along the shore, and farther out the whole surface is dotted with them. The leaves are perfectly circular, and turned up at the edges, so that they look like great, shallow pans floating on the water ; the Indians compare them to the *furnos*, or pans, on which mandioca-meal is roasted ; hence the name, *furno de jacaré*, alligator's roasting-pan.

There must be plenty of fish among the plants, for we see them stirring the surface in every direction ; Abacate surveys the lake with a fisherman's eye, noting here a pirarucú, and there a caruaná, though for our part we can see only black heads, all one to us. We eat our breakfast here, but have no time for fishing ; there is a tangled grass-plot beyond the lake, where we must hew our way through as we would through so much thick hedge. Once across, we resolve at least to have a clear path here on our return ; so Abacate sets fire to the grass in several places, and the flames leap over the dry stalks in an instant, flashing up twenty feet, and sending great clouds of smoke over the lake. We can hear the roaring and crackling, as we push our way on through another bamboo thicket, the worst that

we have yet encountered ; in the end, we are obliged to make a great detour to avoid an utterly impassable mass. Coming out again on the creek, we wade it where it is up to our waists ; the current here is almost imperceptible, and the water is covered, in many places, with grass and pontederias. The whole region is a dead level ; Abacate climbs a tall tree and reports low terra firme to the northeast, about two miles ; toward this we make our way, through a score of bamboo-thickets ; reaching the goal at length, with our stout hunting-shirts torn to rags, and our arms and bodies all bloody. Abacate is hardly able to walk for a great spine in his foot, and I am but little better off with a splinter in my knee ; altogether, we are a sorry party.

The land that we have reached is a low, rocky point, with alluvial ground and bamboo thickets on either side. The forest here is high and open, with undergrowth of stemless *curuá* palms.\* Since leaving the little Lake Morerú, we have seen no indication of any previous exploration ; but here on the point, we pick up two or three bits of broken pottery. Can the place have been frequented by the old Indian tribes ? They might have reached it, perhaps, from the Mãecurú ; certainly, they never pierced these bamboo forests with their stone axes.

We might camp here for the night ; but unfortunately we neglected to fill our water-bottles before leaving the igarapé, and the hard work has made us savagely thirsty. Abacate is for returning, but we resolve to push off through the lowland again, hoping to strike the creek farther up. Fortunately, there are few bamboo thickets in this direction ; we walk easily through open woods until we reach the igarapé,

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\* *Attalea*, sp.



here flowing from the northwest with a sluggish current. It is much wider and deeper than near Lake Cujubim; the banks are lined with beautiful open woods, much like varzea forest; but here the trees are dark-stemmed, and streaming with black moss. By the flood-marks on their trunks, the waters must rise twenty feet or more.

We follow the bank of the creek for two or three miles, when darkness draws on and we are fain to go into camp. There are no palm-leaves here to build a hut of; so we must hope that the threatening skies will not bring rain before morning. We have been pretty thoroughly wet by a shower in the afternoon; with difficulty we light a fire from the soaked sticks lying about, and a bird that Abacate has shot is toasted for supper. We dry ourselves, as well as we can, and so lie down, grievously tormented with the mosquitoes, which give us no peace until the cool air before daybreak drives them away.

We follow the igarapé for five or six miles yet, through open forests and bamboo thickets, but there are no indications of high land or of more lakes. Abacate climbs the tallest tree that he can find, and scans the landscape on all sides; there is a line of *mongubas*,\* he says, stretching off to the west: a water-side tree, that marks the course of the igarapé which we have been following. To the northwest there is a line of higher land, just visible in the distance; to the east, no terra firme nearer than the point over which we passed yesterday. The wonder is, that this great stretch of lowland should be found here, cut off as it is from the Amazons, and only connected with the small river Mãecurú by a narrow passage below Lake Cujubim. Why, we ask ourselves,

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\* *Bombax*, sp.

should this insignificant creek have a flood-plain twelve miles wide? The Amazonian varzeas are hardly broader in some places.

It is now three days since we left Cujubim, but our progress has been so slow that we can hardly be more than twelve miles from the lake; eighteen, perhaps, by the crooked route that we have followed. Mindful of our scanty provisions, we give up farther exploration in this direction, and return to the terra firme point, where we can hope to pass the night free from mosquito-torments. The sky is clouding rapidly; we throw up a palm-leaf shelter in time to escape a hard shower; when that is passed, the darkness has set in, and we have much ado to find wood for the indispensable fire. Palm-leaves are thrown on the ground to form a soft bed; we roll ourselves in our blankets and sleep as only tired men can.

Towards midnight I am awakened by Abacate's dog, which stumbles over me, yelping, and then executes a complicated dance about the fire; while wondering at this phenomenon, we are suddenly made aware of its cause by vicious little bites all over our bodies. "*Corosões!*"\* shouts Abacate, and, begins to slap himself vigorously; we are all overrun by an army of foraging-ants. A half-minute of the battle ends in a quick retreat to the forest. We wait, at a safe distance, until the last of the host has passed by; then return, and sleep undisturbed until morning. Our experience is not an unusual one on the Amazons; often the ants enter houses and run over everything for a little while, but they kill the roaches and spiders, and do no harm. Some of the armies are immense; while attacking, they form compact pha-

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\* Eciton, sp. Perhaps *corção*. I have not been able to find the word in any of my dictionaries.

langes, but at other times, the columns are narrow—five or six ants abreast, and forming lines of almost interminable length. I once noticed one of these lines crossing a forest path at six o'clock in the morning; during the day I frequently passed by the place, and the ants were still keeping their way in the same direction; at nine o'clock in the evening the end of the procession had not passed. Allowing that the insects travelled but an eighth of a mile per hour, which is a very low calculation, the line must have been nearly two miles long, and composed of at least a million individuals. A friend of mine assures me that he once noted an army which was three days in passing a given point. The ecitons travel as the Goths did, carrying their children with them; they have no fixed habitation, but we frequently find them collected in immense masses under a log; this, probably, is during the breeding season, when the females are laying their eggs. The armies are composed exclusively of workers and soldiers.

As we already have a path cut through the *tabocdes*, our return trip is comparatively easy; half a day from the point brings us back to Cujubim, ragged and lame, but only regretting that we have not explored the remainder of the igarapé. Tradition speaks of a large lake called *Mimi*, lying in this direction; but within the memory of the oldest fisherman no one has visited it.\*

Our eight weeks of geological exploration have not been unproductive of results, though the rock exposures are few and far between. What we have seen may be condensed into this. The campos and low hills east of Paracary show only coarse sandstones and clays, of the universal Amazo-

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\* The Indian, Abacate, subsequently explored this igarapé for eight or ten miles farther, but he found no more lakes; the flood-plain was as wide as ever.

nian formation : Tertiary or Modern, without fossils, so far as we can find. North of a line extending east and west through Terra-preta and Curicaca, the rocks are sandstones of the Carboniferous series ; and at Cujubim there are slight exposures of limestone, precisely like that of the Lower Tapajós. The rocks are very nearly level ; everywhere they are obscured by trap-intrusions, diorite and breccia, so that it is very difficult to obtain sections. Fossil-hunting is anything but a pastime in these jungles ; our Cujubim collections are brought away with difficulty, on a horse, but at other places we must hire men to take them to the nearest canoe-landing on their backs.\*

The wet season comes on apace, and the rains make forest exploration uncomfortable and tedious. With regret we leave the beautiful lakes and our kind friends, Indian and white. Graciano takes us in his canoe to Alenquer, passing over the flooded meadows and through two or three other lakes lying close against the terra firme. I must tell you of my own explorations about Alenquer, and beyond to the river Curuá.

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\* The following notes may aid future geological explorers in seeking out new localities. Among the country people, *pedra brava* generally denotes the coarse, purple sandstone rock of the Tertiary (?) series ; *tabatinga* is Tertiary clay ; *pedra de amolar* (whetstone rock) is generally a sandstone of the Carboniferous or Devonian series, and will always repay exploration ; *pedra preta* is generally diorite, with which Palæozoic rocks may be associated ; *pederneira* (flint), or *pedra para tocar fogo*, may be chert or cherty rock, or sometimes diorite. *Pedra de cal* is limestone, but other white rocks are frequently mistaken for this. Pay no attention to rumors of gold or coal-mines.

## CHAPTER X.

### THE CURUÁ.

MY impressions of Alenquer are very pleasant. I reached the place one afternoon, just before sunset. There was the usual row of picturesque whitewashed houses, and a church, not at all handsome; a great tract of open grass-land stretching down to the water-side, and a forest-covered ridge back of the village. What with the sunshine on the houses, and the dark woods in the background, and the bright green turf, it formed an exquisite picture; the more so to me, I suppose, because I had been canoeing all day by wild forests, and the sunset village came in sight suddenly, as we rounded a point.

After this, I was here very often, and came to like the place immensely. At first I lived with one of the villagers; but after awhile I had a house of my own, and picked up a man to work for me. This fellow, Pedro, was my factotum for a long time. He was a young Indian, rather weak-minded, but he served me so faithfully and was so ready and affectionate, that I became much attached to him. He was in debt, of course, and his creditor made him work at intervals by way of payment; I persuaded this creditor to make out an account, and advised Pedro to leave half of his wages in my hands for its payment; in this way, I had the satisfac-

tion of seeing the debt cancelled before Pedro left me: though I have no doubt that he made another one as soon as possible.

Alenquer lies several miles away from the main Amazons, on a side channel, the *Igarapé d'Alenquer*; or rather, just within the mouth of a small affluent, the *Igarapé de Itacarará*, which enters the Alenquer from the north. This Igarapé d'Alenquer is, as we shall see, the outlet of the river Curuá; but it contains Amazonian water also. It is wide enough



Village Scene, Alenquer.

and deep enough for any of the river steamers; in the dry season they receive cargo directly at the bank, but in January and February the water overflows the great grass-plot before the village, almost up to the streets; then the steamers must be loaded from canoes. Alenquer has a thriving trade in Brazil-nuts, cacáo and dried pirarucú-fish. There are a

dozen stores, with groceries and dry-goods ; a few workshops, and so on. The place may have eight hundred inhabitants. Like most of the river towns, it is well laid out, with wide streets, and a square before the church ; the houses are modern, very well built, of adobe or brick, and with tile-roofs ; only a few, in the outskirts, are palm-thatched.

The people are unceremonious and hospitable. The merchants are shrewd money-makers ; most of them own cattle-farms or cacáo-plantations away from the town ; these are their best securities, and the starting-points with many of them. The educated people are the schoolmaster and two or three provincial officers ; perhaps I should add the priest ; he was a man of fifty or thereabouts ; bad-featured, immensely corpulent, and the most immoral person in the village. He was noted as a hunter ; used to spend entire days in the woods, rain or shine, and very hard work it must have been with his fat body. As for pastoral labor, that was pretty much confined to saying mass, officiating rarely at a marriage or burial, and baptizing children ; these latter, at Alenquer, are out of all proportion to the marriages.

All through the country towns of Brazil you will find ecclesiastics like this : sensual, immoral, degraded, a by-word and a reproach among the people. I believe that most of these men commence their lives with honest purity of purpose ; but the temptations of their position find ready victims in enforced celibates ; then, with the first sin, comes remorse ; with others despair ; and the priest settles down to routine, and reckless impurity, and shame hardly concealed. He is worse than other people, because he *is* reckless, and intelligent, and well-fed. Now, I think it wonderful that there are any good priests. Sometimes you meet with such, like the vicar of Santarem : unselfish Christians, who do more by

their example than they could by volumes of sermon-sanctity. But they often lose the respect that they deserve, because intelligent people have become disgusted with priests altogether; unjustly lump the good with the bad, and fare the worse themselves. Other men revere the office, though they may despise the man; and the lower classes worship blindly, and laugh at the priest and his immoralities if they think of them at all.

I found much to interest me around Alenquer. The woods are high and pleasant; there is a good road running back three or four miles to the picturesque Lake Curumú, where I sometimes went with Pedro. The lake is in a hollow of the terra firme, communicating with the varzea plains by a narrow passage; in other words, it is a projection of the alluvial land that has not been entirely filled in. The shores are low, and rocky in many places, with long spits of sand, and groves of javary palms.\* A score or so of houses are scattered along the shores. Pedro and I stopped with an old Indian, apparently a pure-blooded one, but he differed from nearly all the Indians that I ever saw, in that he had amassed a little property; besides three or four good houses, he had a cacáo plantation on the lowlands, and fifty or sixty cattle. His Curumú house was quite a triumph of rural architecture: covered with palm-thatch, of course, and with earthen floor; but it was very neatly built, and had three large rooms. The old fellow was rough, but good-hearted; he made long excursions with me in the woods, and marvelled greatly at my saving worthless stones and bugs. His wife was a virago, and, like the rest of her class, had a soft side; I used to mollify her with tobacco, but she steadily refused

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\* *Astrocaryum javari*.



to let her daughters smoke ; said it was an expensive habit, which young women should not learn. The girls often begged a pipeful on the sly, smoking it when their mother was away.

At Curumú and the neighboring settlements, I tried to pick up canoemen for my projected trip to the Curuá ; but,



An Indian Kitchen.

it was by no means easy to make up a crew. The river has a very bad reputation for fevers and general sickliness ; not without cause, it must be said, though probably the ill is overrated. The Indians go there readily enough to gather Brazil-nuts, or to fish, but it is the free life that attracts them, and the possibility of large profits with successful work. Canoeing, under another man's orders, has no such charm ; their experience is with the traders, who keep them in a condition of semi-servitude, and pay them but scantily in the

end. At first I could not find a man to go with me. After a little, I began to speak of my expedition rather as a pleasure excursion, a tour of discovery, with plenty of fishing and turtle-hunting thrown in ; but even with these attractions I could get only two men besides Pedro. One of these, João, was a dark *cafuzo*,\* a willing fellow, but apt to be sullen and passionate whenever he thought I was infringing on his rights. The other man, Antonio by name, was an old *mameluco*,† whose sole possessions in the world were a ragged hammock and his little boy, Feliciano. He stipulated in the outset that the boy should go with us. I agreed to take him, at least as far as the settlements of the lower Curuá, where we would decide finally whether he could safely go to the falls. Antonio proved to be very faithful and hard-working. He was so devotedly attached to little Feliciano, that he would hardly suffer him to go out of his sight ; the boy always slept in his father's hammock, and sat by him in the canoe ; the old man gave him his bath night and morning, saw that he had tender bits at dinner, and carried him over rough places on shore. Yet the two were not demonstrative in their affection ; Feliciano, sitting quite still by his father, was like any other Indian or half-breed child ; and I never knew Antonio to caress him, or say a loving word to him.

I hired a good, serviceable canoe of one of the Alenquer merchants ; provisions for several weeks were stowed away in the little thatched *tolda*, and I hoped to fill out my insufficient crew at the Curuá settlements. So we left the village early one morning, turning up the Igarapé d'Alenquer, which runs here between bright green meadows, with clumps of

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\* Cross between an Indian and a negro.

† Cross between an Indian and a white.

trees along the shore. The water was almost at its lowest point, fifteen or twenty feet below the meadows; the clay banks steeply cut, as on all the varzea channels, but everywhere with a floating fringe of beautiful *canna-rana* grass. Under these grass fringes the fish love to hide; pretty *acarás*,\* or slender *sarapós*,† or great clumsy *pirarucús*;‡ and often the swaying stalks showed where an alligator had been sunning himself by the bank.

The igarapé has a pretty uniform width of about one hundred and fifty yards; the water is clay yellow, like the Amazons; current strong, but not swift. About fifteen miles above Alenquer, the Amazonian water flows in through a wide, short channel; this channel, indeed, is regarded as the upper mouth of the Alenquer, and the stream which flows in from the west, like a continuation of the Alenquer, is known as the *Igarapé do Lago de Curuá*; thus, the Alenquer would be a *paraná-miri*, or side channel of the Amazons, receiving the Igarapé do Lago at the upper end. The latter stream has still a portion of Amazonian water, as we shall see; but in the endless ramifications of the lowland channels, it seems simpler to regard the Igarapé do Lago and the Igarapé d'Alenquer as portions of the river Curuá—channels in which it flows through the lowlands, to enter the Amazons near Paracary.

The steamboats of the Amazonian Company, coming down from Obidos to Alenquer, enter the igarapé through this upper mouth. There is a thriving little sugar plantation here, the cane growing well on the raised border, where it is flooded only during three or four weeks of each year. For the rest, the grass-lands afford pasturage to many small

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\* *Mesonauta insignis*.

† *Carapus*, sp. var.

‡ *Sudis*.

herds, and a few large ones. The whole region is varzea meadow; only, far to the north, we could see little islands of terra firme, rising above the rich green of the plain. Some of these islands contain strips of grass-land, where the cattle are kept during the floods; but the larger herds are driven away to *Campo Grande*, the great highland pasture north of Alenquer.\*

Stopping constantly to examine lakes and channels, our progress was slow enough; we passed the first night at a cattle fazenda, and only in the afternoon of the second day reached the broad lake Curuá, twenty-five miles from Alenquer. Long before reaching the lake, the belt of trees along the banks had disappeared; the banks themselves were lower, and almost as far as we could see, there was only clean, bright meadow, as level as the ocean. No doubt these low meadows are a more recent formation than the high ones near Alenquer; the Amazons has had no time to build them up, and throw on a raised border where forest trees can grow. Time was when Lake Curuá extended far down toward Alenquer; but every flood has added a little to the meadows at the lower end, and so, in the course of centuries, they have attained their present limit, leaving only a long outlet through the Igarapé do Lago.

There was a fine breeze over the lake when we entered it; the men had the sail up in a moment, and we bowled along, six or eight miles an hour, spray flying and water fretting merrily under the bows; open horizon ahead of us, and the two sides only visible as a broken line of meadow, with clumps of trees here and there. But the lake is very

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\* I have never visited Campo Grande. According to the reports of the herdsmen, it is a stony plain, many miles wide and at least twenty long; probably it would repay geological exploration.

shallow ; once we ran aground almost in the middle, and even in the deeper places we could sometimes touch the bottom with our boat-poles. During very low *vasantes*, it is said, the lake is reduced to a mere channel, with mud-banks on either side ; the still larger *Lago de Tostão*, near by, dries up altogether.\* Tostão communicates with Lake Curuá by a mouth about four hundred yards wide. Just by this entrance, on the southern side of it, there is a little clump of high woods, called *Ilha de Muim*. The men had told me that this was a terra firme island ; but the nearest highland to the north was eight or ten miles away, and beyond the Amazons I knew that the southern mainland was still farther off ; I could not believe that such an insignificant fragment could be left in the very midst of the varzeas. As it turned out, however, the men were right. We landed on a pebbly shore, and found little ridges of rounded stones, perhaps three acres in all. The island is covered, or nearly covered, during every flood ; but it is none the less distinct from the mud and clay around it. Not the Amazons itself could throw up a ridge like this ; there must be a foundation of solid sandstone below, from which these pebbles have been washed. Yet the trees are of varzea species.† Mixed with the pebbles I found numerous fragments of pottery, and bivalve shells like those in the shell-heap at Taperinha. No doubt the island was frequented, centuries ago, by shell-fish eating Indians—perhaps the same tribe that built the Taperinha mound. Shells and pottery have been rolled about until they

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\* According to Sr. D. S. Ferreira Penna : *A Região Occidental da Província do Pará*, p. 60.

† I regret that I did not make a careful examination of the plants on this curious island, but I was much pressed for time. The sandstone is hard, and of various colors.

are hardly recognizable ; those that are left must have come from large heaps on the ridge.

We went a little way into Lake Tostão, which stretches far to the western horizon, but it is so shallow that we hardly found water for the canoe. Alligators swarm around the mouth like so many tadpoles ; I counted seventeen within easy pistol-shot. During great *vasantes*, when the lake dries up, they are forced together in little pools ; there they grow ravenous with hunger, until they devour each other mercilessly. Woe to the ox or man that falls into one of these terrible pools : a quick struggle, a trail of blood, and a score of hideous reptiles are tearing limb from limb. Yet at other times the alligators are cowardly, and generally harmless ; these at Tostão never offered to attack us, though the men were bathing up to their knees in the water.

Lake Curuá extends twenty miles or more, almost to the terra firme ; but different parts of it are known by different names : *Lago de Cardoso*, *Lago dos Botos*, *Lago de Macurá*. When the waters are lowest, these parts form separate lakes, connected by wide, short channels ; but at other times the whole series forms a single sheet, varying in width from one mile to eight or ten. On the southern side, Lago de Tostão lies close to the Amazons ; to the north, a score of smaller lakes are scattered about the varzea meadows ; to the southwest, another group extends almost to Obidos.

All of these lakes are rich in fish ; Curuá and Tostão, especially, are celebrated for their great harvests of pirarucú. We saw many fishing canoes, and now and then an open hut where some Indian family had camped for the summer ; a most uncomfortable life they must have led, for the mosquitoes here were numberless ; at nightfall we were surrounded by swarms of them.

We had turned to the north now, entering the river Curuá. At first it is a narrow channel in the floating grass, where we could hardly force our way against the swift current; but farther up, the banks are well defined—nearly two hundred yards apart, with a border of trees hiding the meadows within. The floating grass below marks a long shallow, where the river is forming its little delta in the lake; this shallow forms, also, the limit of Lago dos Botos, where it is separated from the main Lago de Curuá.

It was midnight before we reached the settlement of Curuá; a chorus of barking dogs greeted us as we landed at the high banks and walked up to a whitewashed house nearby. I shouted long before the owner came out, sleepily, to greet me; but his hospitality was ready enough; in ten minutes my hammock was swung in the best room, and I had forgotten about mosquitoes and everything else. So it is with this half-wild life: sleep is a solid block cut out of existence; you enter a blank; you emerge to sunshine, and health, and life without limit.

The village of Curuá\* is one of those out-of-the-way

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\* Formerly a mission village, called *Barés*, was established just above the present settlement, at the place now called *Curuá-velha*; in 1758 it took the name of *Logar de Arcozello*, but shortly afterward the mission was removed to Obidos. Tradition says that Alenquer (then called Surubiú) took its rise from the same village of Arcozello, the people removing bodily, on account of the unhealthfulness of the old location. But if this change took place, it must have been very early, for already, in 1758, the village of Alenquer was created by official act; in Moraes (*Historia da Companhia de Jesus*, 1759) I find the two villages mentioned as *Surubiú* and *Curuhá*. José Gonçalves de Fonseca (*Navegação feita da cidade do Gram-Pará*, 1749) wrote: "The lake Surubiú (Curuá) opens by two mouths into the Amazons. On the eastern side (?) is founded a village, having the same name as the lake, and under charge of the Capuchin Fathers. The Indians of this village live in great plenty, not only from the lake, but from the campos, where cattle are raised." The present village of Curuá was founded in 1849. See D. S. Ferreira Penna, *op. cit.*, pp. 64, 65.

places that one finds scattered through the Amazonian region—a drowsy, happy, old-fashioned settlement, the very type of tropical repose. Steamboats cannot come here; the nearest ports are Alenquer and Obidos, a day's journey away, either of them, canoeing through the channels. The villagers do not concern themselves greatly with these river towns; up here it is cool and healthful; the land is rich, and the fish are abundant, and Curuá is *bonita*: that is it, *bonita*—pretty, the word that expresses all excellence to the rustic mind. Please God, they shall live here where their fathers lived, and the vague outside world may go on with its sputtering steamboats, and great, candle-lit churches, and broad-cloth coats.

Some fifty palm-thatch houses are scattered irregularly along the shore, and in the second-growth woods beyond. To this day I know not but there may be fifty more; I was forever stumbling on them when hunting for insects along the narrow paths. The Indians, especially, seem always to conceal their houses; each one is built in a little cleared space, which is kept quite clean, and free from weeds and bushes; but even if the house is near the main path, they almost always leave a hedge of tropical growth before it, so that a passer-by sees nothing of the open ground. Perhaps this is an instinct, inherited from their naked, brown ancestors; savages hide themselves as birds and beasts do, even when they have nothing to fear.

There are three houses of more aristocratic port, white-washed and tile-covered; two of these are stores; the other is occupied by the village schoolmaster, but the school is accommodated in a palm-thatched shed adjacent. The master—good old Braz Correa, I shall never forget his obsequious visits to me, and how he made the little boys rise up to



do me reverence when I passed by the door. It is different in the steamboat ports ; bless you, the travelling naturalist is no uncommon visitor there, and the people never think of lionizing him. But they lionized me at Curuá, as never a bug-hunter was lionized before. I walked about, serenely aware that I was the most important man in the place.

The sensible country people went about in light cotton clothes ; the women with skirt and chemise, the men with trousers and shirt and a broad-brimmed straw hat. Braz Correa and one or two others had coats, which they wore on state occasions ; and most of the well-to-do peasants were possessors of shoes, which they carried in their hands quite as often as on their feet. Shoes are galling, and should be used only in company.

I lived with one of the principal storekeepers, a nearly pure black, and one of the few of his race that I have seen in positions of trust ; he was employed by an Alenquer merchant to superintend this branch establishment, and a very steady and hard-working fellow he was. Every day I walked



An Indian Mother.

out into the forest. It was primeval forest, untouched, except close to the village, and the highest and most luxuriant that I ever saw, even on the Amazons; more than a hundred feet on the level, with individual trees rising far above that. The ground here was carpeted thickly with ferns and delicate lycopodiums; the tree-trunks were mossy and always damp; in the thick forests the dew stood on the leaves until near mid-day. Perhaps this damp atmosphere and more luxuriant growth betoken the true limits of the Upper Amazonian woods; to the eastward the forest is not so high, and it is more or less interrupted by open campo lands, as we have seen near Paracary. At Curuá the ground is level and not very high, though out of reach of the river-floods. It is a rich, sandy clay; in places there is black loam with fragments of pottery, like that at Taperinha.

Everywhere in the Curuá forest there are narrow paths and trails, made by the Brazil-nut gatherers; this is one of the richest nutting-grounds on the Amazons: many hundred persons come, in January and February, to gather the fruits and sell them to traders.

If you have ever thought of it at all, you have supposed that the Brazil-nut business was a very small affair; hardly worthy to be called an industry. You can conceive of an orange commerce, because everybody eats oranges; but who ever could be found to buy Brazil-nuts?

School-boys, my dear sir. This is, precisely, a commerce for school-boys. I fancy that more than half of these colicky nuts, which employ so many persons in the gathering, and so many ships in the carrying, reach their final destination in the school-boy pocket and the school-boy stomach. Here is a problem: Given one million boys, each of whom devours ten Brazil-nuts per month (a small allowance,

surely); how many bushels will the million consume in a year? Multiply your million by just as many as you think proper, to embrace the school-boys of the United States, England, France and Germany, and I think that the Brazil-nut commerce will cease to be a matter of wonder.

The nuts rank third in importance among the exports of the Amazons Valley, the two first being rubber and cacáo; small quantities, also, are sent out of Maranhão, and a few, perhaps, from the Orinoco. From Pará, the exportations have greatly increased within the last few years, reaching over one hundred thousand *alqueires* annually, or about eleven million pounds. A large proportion of these nuts come from the rivers Tocantins, Xingú, Trombetas, and Curuá.

The Brazil-nut tree\* is superb; so high, that its great, thick-leaved domes rise sheer above the forest around, fifty feet or more. I measured, by angulation, one that was over two hundred feet from root to crown; its magnificent, straight trunk was fifteen feet through at least, and with never a branch for a hundred feet from the ground. I have no doubt that there are higher ones; but it is impossible to measure them in the thick forest. On the Curuá, the other giants look like pigmies beside these; you can see the great crowns, ten miles away or more on the hill-sides. The *Bertholletia* grows on low, rich terra firme, like that of the Curuá; never on the flood-plains. As Senhor Penna has remarked, the trees form two zones, one on either side of the Amazons; on the branch rivers they generally mark the limit of free navigation, where the rocky terra firme stream is merged into the deep channels of the flood-plain.

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\* *Bertholletia excelsa*.

The tree has a rough bark, and rather large, dark, glossy green leaves ; a varnished green, like that of trailing garden-myrtles or dwarf-box. The nuts, sixteen or eighteen together, are packed away in a round, hard, black case, like a cocoa-nut, but rougher ; nature does this packing so neatly that, once removed, no puzzler could get them back again. When they are ripe the cases fall to the ground ; of course, it would be useless to attempt to gather fruit from such a tree ; and experience has shown that picked nuts will not keep.

With the incoming of the nutting season, the Curuá forest takes a new aspect. It is no longer silent and deserted ; canoes come every day, with Indians and half-breeds ; many with their families, and household utensils for a three months' campaign in the woods. They come from Obidos, Alenquer, Santarem, even Prainha and Itaituba, two or three hundred miles away. Tiny, palm-thatched huts are built along the banks, and hammocks are swung to the trees ; every day the woods are traversed by the nut-gatherers ; every night the shores are lighted by their fires.

It is not an easy life : tramping through many miles of the thick forest, they must bring in their day's gathering—sixty or eighty pounds, perhaps—on their backs. They are content to breakfast and sup on a bit of fish and a little mandioca-meal ; even these sometimes fail them, for the improvident people do not care to burden themselves with a large stock of provisions ; besides, their forest-work leaves them little time to fish and prepare food, and the wet season is always the time of scarcity. It is the time of fever and weakness, too. The Curuá village is healthy enough ; but far up the river, by the rapids and along the narrow side-streams, the air is full of miasma ; the forests are reeking

with it. And it is there that the nut-trees are most abundant; there hundreds of gatherers are wandering for weeks, soaked by the frequent showers, working like beasts of burden, often half-starved, and it is no wonder that the fever seizes them. It is not often directly fatal; but the poor wretches are tortured for months; they have no medicines, and they do not take care to provide themselves with nourishing food when they can get it; many of them die at length, either of the ague, or of liver complaints that are brought on by it.

There are direct perils also. Sometimes the gatherers are lost in the woods. They told me of one American sailor, who was lost in the Curuá forest, and wandered for seven days, with no nourishment but the hard nuts. Luckily he was picked up by the Indians; others have been less fortunate. Sometimes canoes, loaded with nuts, are overturned in the rapids, and the boatmen are drowned. But the grand danger—the one most dreaded—is that of the falling nut-capsules. They are five inches in diameter, and weigh two or three pounds; falling a hundred feet or more, they come crashing through the branches like cannon balls, and bury themselves often six inches deep in the ground. You can imagine that a man's skull would be small proof against such a missile. The gatherers keep to their huts while the morning wind is blowing, and if their roof is at all exposed it is inclined strongly, so that the fruits will glance off from it.

While the fruits are falling, the gatherers occupy themselves at home, cutting open the hard cases with their heavy knives, and drying the nuts in the sun. When the wind dies away, men and women sally out to the gathering, bringing the nuts on their backs in great baskets. They sell them to the traders, at rates varying from one dollar and twenty-five

cents to two dollars per alqueire, according to the abundance or poverty of the harvest. Besides the two stores at Curuá, which do their most thriving business during the nutting season, there are always trading canoes, well stocked with smaller wares. The traders, as usual, keep the peasants in debt, and often cheat them unconscionably, making them pay two or three times over, perhaps ; for none of the poor people can keep accounts, or would if they could. At Curuá, the store-keepers often give credit for six or eight months, until the yearly nut-harvest comes in to their store-houses. It must be said that the peasants very seldom shirk their obligations entirely, though they are never in haste to pay.

The traders dry the nuts frequently in hot sunshine ; finally, they are packed in baskets and shipped to Pará, always, of course, under the credit system : for the Pará merchant receives these cargoes in payment of debts incurred by the river-merchant or traders. From Pará they are shipped as soon as possible : largely to England and the United States, but a few go to France, Portugal, and Germany. The nuts do not keep well in this climate, and merchants always avoid an accumulation of them.

The prices in Pará, as reckoned in the custom-house, vary from two and one-quarter to three and one-half cents per pound ; allowing for the profits of the commission merchant, it must be somewhat more. The export duties (1878) are no less than thirty-six per cent., including the provincial and municipal taxes, and those of the General Government.

The fresh nuts are really very nice ; but it is a matter of wonder to me that I could ever have liked the stale things I used to buy in the grocery stores. Yet I remember that my school-boy taste was not superior to raw and unseasoned artichokes, and wild elderberries. Well, well !

There is another Amazonian nut that seldom reaches our markets—the *sapucaia*.\* The tree is hardly less grand than the *Bertholletia*, but it has a wide, umbrella-like crown, and buttressed roots; it grows, too, indifferently on the terra firme, or in the swamps, or on the edge of the flood-plains. The fruit-capsule is as large as a man's head, or larger, and very thick. It is closed above (or rather, beneath, as it hangs from the branches) by a round lid; when the fruit is ripe, this lid drops out, and the nuts fall to the ground. As they have now no hard case to protect them, they are soon devoured by the forest animals; monkeys, various rodents, and birds seek them eagerly; so, though the tree is common enough, it happens that only a few nuts are left for the gatherers; consequently they are more valuable, selling regularly at three times the price of the Brazil-nuts. The *sapucaias* are much better, too; when fresh they are delicious, and highly prized by the Brazilians themselves; but they do not keep well. Most of them go to the London market. They are rather smaller than the Brazil-nuts, lighter-colored, and very irregular in shape. These nuts are so valuable, and in point of fact so common, that it seems a pity to leave them to waste. Perhaps some means might be devised for protecting the fallen fruit from animals; but I confess that no feasible one occurs to me.

These two nut-trees are valuable in other respects. Both of them, it is said, furnish excellent timber for ship-building; the fibrous bark of the *Bertholletia* is used for calking canoes, for stuffing saddles, and so on; probably it might make a good paper-fibre. But the Brazilians wisely discourage such destruction; both the trees grow very slowly, and do not

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\* *Lecythis ollaria*.

bear fruit until they are very large. It would be a pity to spoil patriarchs that have been a thousand years or more in maturing.\*

Sometimes my walks were along the edge of the flood-plains; almost always there is a path running through the meadow-land, where it adjoins the forest; and the plants and insects in such places are peculiar. In the dry season these paths are very pleasant; but as the waters rise they become impassable, and then the only communication is by canoe. Most of the settlements are on projecting points of terra firme, and the paths cut across the bays of varzea between; but the outline of the highland is so irregular, that a flood-season path from point to point would necessitate detours of ten or fifteen miles around the varzea bays.

One of these summer paths leads from Curuá to the neighboring settlement of *Macurá*, about two miles. I will describe it, because it shows well the variety of ground that one finds along the edge of the Amazonian plains. At first the trail leads through a strip of low terra firme forest; this is partly second growth, but so thick with saplings and mat-

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\* A clear oil, like olive-oil, is obtained from the Brazil-nuts by the following process: The nuts are roasted and the meats extracted; in this condition they have a very rich flavor. They are pounded in a wooden mortar, and pressed and strained in a *tipiti*, when the oil runs out. It is used for cooking and for lamps; excellent white soap can be made from it. Another, clearer and sweeter oil, is obtained in a similar manner from unroasted nuts; this is excellent for table use. See Barboza Rodriguez, *Relatorio sobre o Rio Trombetas*, p. 17. He suggests that, with proper machinery, the business of extracting this oil might be very profitable. Preparations from the bark and nut-capsules are sometimes used in Brazil as emollient medicines, and for ague. Chernoviz (*Formulario*, eighth edition, p. 553) says that a decoction of the sapucaia-bark is prepared with eighteen parts of water to one part of bark. A tincture, sometimes used for catarrh, is made from the nut-capsules of the sapucaia, by keeping water in them for several hours. As a remedy, this water is taken, cold, as often as the patient desires. Only the fresh shells can be used.



ted vines that it is almost impossible to leave the path at all. There are not many palms here; the few scattered ones are spiny *tucumás*,\* and small *marajás*.† The trees are such as I have described elsewhere in the forest, slow-growing kinds, most of them, and valuable for timber. The ground is covered with moss-like lycopodiums.

A little farther on, the path descends almost imperceptibly, and at once there is an entire change in the vegetation. This is *baixa* land, within reach of the river floods; nearly all the trees are different from those of the main forest; the majority are valueless for timber, too soft, and rotting easily. The scattered tucumá and marajá palms are replaced by groves of *murumurús*‡ bristling with black spines like bayonets, and occasionally a clean-cut, stately *uanassú*.§ There are hardly any vines, and the undergrowth is made up of large-leaved, succulent plants; royal weeds, that would be admirable if they were root-bound in flower-pots, and shut up in conservatories. But, look you, Nature's conservatory has an art that you never dreamed of. These great, glossy leaves have three tints: one dark, almost black: that is the ground work, from diffuse light in the forest; one bright color, white, like water against a clear sky: that is the reflected sunlight; finally, an indescribable rich green,—chlorophyl green, which no painter could ever imitate: you get that by refracted, not reflected, sunlight.|| Well, but you spoil all this; you take forest-plants and set them in the broad sunlight, so the three colors are all run together into

\* *Astrocaryum tucumá*.

† *Bactris*, sp. var.

‡ *Astrocaryum murumurú*.

§ *Attalea speciosa*.

|| If you will see it to perfection, lie down under a great dock—I used to when I was a child—and watch the light filtered through these splendid shields and coming to your eyes like balm.

an ugly tint that Nature is ashamed of. She tries to better it by modifying the plant for its new life ; but she cannot do that in one or two generations ; give her time and she will arrange the chlorophyl, and shining cover, and wood-cells, so that you will have a plant for open sunlight ; but it will not be the forest-plant, any more than a poodle-dog is a wolf. At present your plant is good only in outline, and even that is not perfect, for the leaves are ashamed and headachey, and go drooping.

Now see how Nature does it. She gives plenty of space to the dark groundwork, because she will not spoil her plan by excess of tinting. Then she sends light-streaks down through the forest-roof ; half a dozen leaves catch them, and glow like diamonds. Then she drops a beam behind one or two great shields, and they turn semi-transparent and liquid with the magnificent chlorophyl green. Observe, she keeps the outlines ; as a whole, the work is perfect, and then she perfects perfection with these exquisite touches—these lights that have no outline.

The soil in the high forest is sandy, and the ground is covered, as I have said, with lycopodiums or ferns ; but here in the baixas it is dark, bare clay, cracked where it has dried after the floods. This open forest is very characteristic of the lowlands ; in most places you can walk between the trees without much difficulty.

After this, the path emerges from the forest and crosses a great tongue of open meadow-land, which reaches for two or three miles into the terra firme. This meadow is not clean grass-land, such as we see about some of the varzea-lakes ; it has thickets of prickly mimosas—long lines, always parallel to the forest-edge,—and everywhere there are bright flowering weeds of fifty kinds. In the middle of the meadow there

is a stream that we must cross—a row of pools, hardly seen in the grass, but marked here and there by small, fan-leaved palms, *caraná*s.\* As at Curicaca, the great tongue of meadow-land is the flood-plain of the little igarapé.

Generally a few cattle are grazing on the meadow and pushing their way through the mimosa-thickets. Flocks of black *japú* birds† flutter in the bushes and whistle plaintively; there are troupials, with bright red breasts,‡ and *rouxinols*,§ like orioles, and smaller birds without number; for these strips of meadow are favorite feeding-places for the lowland birds. I found insects on the mimosa-bushes, but the species were not numerous. There were plenty of ground-beetles, difficult to find except when they were flying in the twilight; then I caught them by hundreds. Most of the meadow insects are gregarious; the forest species are solitary, and much more difficult to find.

On the other side of this tongue of lowland, the terra-firme forest comes down to the meadow, and here there is another set of plants. The superb uauassú palm is in its glory—smooth-stemmed, straight as an arrow, and the broad, shining leaves twenty-five feet long. Back of these there are thick-leaved trees, some of them peculiar to the ground; you see *pataú*s|| taking the place of the uauassús; and back of all is the great, rolling forest, the Brazil-nut trees towering over it with domes a hundred feet across: all this in contrast to the sunny meadows, and the placid lake, and the cloudless sky.

Lake Macurá receives a little tortuous igarapé; it is narrow, and deep, and swift, navigable for large canoes, and

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\* *Mauritia caraná*.

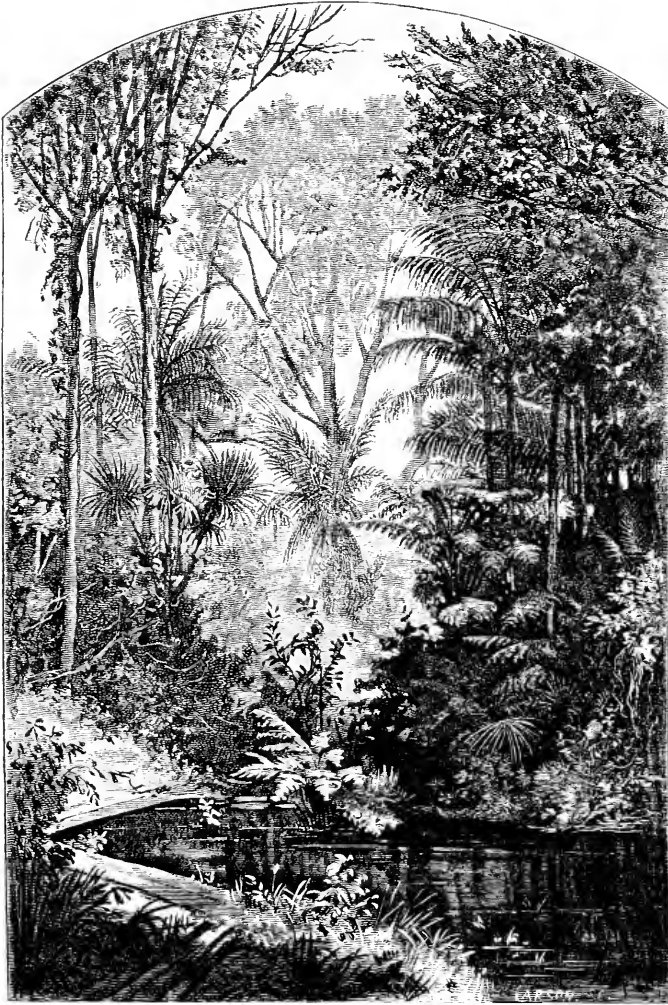
† *Cassicus cristatus*?

‡ *Trupialis Guianensis*.

§ *Cassicus*, sp.

|| *Enocarpus pataú*.

the banks are sharply cut. These features distinguish it from *cabeceiras*, that come from springs in the terra firme, and subside into rows of pools when they enter the points



Highland Stream.

of varzea. The *Mamaurú* is a *furo*, flowing from the Amazon s below Obidos; it is twenty-five miles long, at least, and communicates with a dozen lakes. Through Lake Macurá its waters join those of the Curuá, and so the highland river, before it flows into Lake Curuá, gets its little contribution of Amazonian water,

just as the Tapajós does. This is a rule which hardly varies with the Amazonian tributaries.

I made the acquaintance of the Macurá peasants; simple people, like the rest, and lazy, of course. These afternoon landscapes have such an endless repose about them: no more idea of activity than one of the cows, dreamily chew-

ing her cud out there on the meadow. The trees are asleep, the plains are asleep, the lake is asleep; and mine host lounges in his hammock, and is drowsy, whether he will own it or not. Sit you in another hammock, and drowse or sleep; do not disturb his repose: so shall it be sweet.

But back of the forest I found a bit of the outside world. One morning I walked up to the head of this tongue of meadow-land that I have described; it ended in a strip of *baixa* forest, through which there flowed a bright, sparkling stream; you would not have recognized it in the sluggish pools below. In the *baixa* I found tree-ferns indescribable, and lovely *assaí* palms; on the other side there was a neat clearing, and a man planting tobacco in it. He was a middle-aged man, thin and dark, evidently a half-breed; he had a little house in the clearing, and his nicely-dressed wife was sitting inside, sewing.

The man had come from the mining districts of Southern Brazil; he had wandered over the province of Pará, everywhere seeking for gold, with that hopefulness that is the gold-seeker's blessing or curse. He took me back five or six miles into the forest, and showed me where he had washed sand from the bed of a stream; the stream was full of diorite and sandstone boulders, but I saw no proof of gold, and told him so. He said he had seen a gold specimen from this very place; an Alenquer man had shown it to him at Pará, and you could not deceive him, an old miner. These mythical specimens are forever spoken of on the Amazons, but I could never get a sight of one that was more than pyrites or mica. I see no reason why there should not be gold to the north and south of the Amazons, but I question if it has ever been discovered.

My wealth-seeking friend had a fine little plantation, and

a pleasant home, as things go with the peasants; he was sober and industrious in the main, which they are not, always. But their happiness was not his: he lacked contentment. His sharp eyes wandered restlessly; he asked me questions about my travels, and the rivers I had explored. He must go to Pará, he said; the children there—two naked, brown cherubs—were still pagans (*i. e.*, unbaptized), and should be made Christians at the capital; for no, Senhor, the Alenquer priest could not do it. Captain T. had promised to stand their godfather, and the captain was to be sought in Pará, and in fact, they must all go down there as soon as the harvest was in; they could return, etc., etc. All of which meant that he had been in one spot long enough. Well, here was a man a shade more intelligent than the Indians; consequently, better able to take care of himself; but he went twitching all over in a nervous seeking for wealth he would never get, and change that would never satisfy him to his dying day; and the Indians repose and are filled with peace. So goes the world; and I have been pinning a homily to my physical geography.

To return to Curuá: Braz Correa, as I have said, was the village schoolmaster; a jolly, twinkling, good-natured old fellow, whose school was his pride and delight. There was no priest in the settlement; but Braz, an enthusiast in music, taught the young people to sing very sweetly. They gathered, every Saturday night, in the tiny thatched chapel, and chanted the beautiful, plaintive Portuguese hymns, with voices so clear and pure that the boatmen on the river paused to hear them, and one by one the villagers gathered before the chapel door with uncovered heads and whispered words. The old man stood there before the shrine, happy in the consciousness of his high position, devotional but watchful, a

leader, every inch of him. I thought to myself, how much purer in spirit this man was than the unctuous, bad-faced Alenquer priest, mumbling through a mass that was profanity on such lips. Braz Correa would have bowed low before him, and taken his dirty blessing as pure gold. Well, even the priest could not have spoiled a blessing for Braz ; the gold comes from a higher source.

One day the schoolmaster's baby-grandchild died, very suddenly. The mother had called me in haste to know if I could save it ; but the disease—a very bad case of croup—was far beyond my poor little medicine-case. The woman was very grateful, nevertheless. Next morning Braz came to me, with an important face, and his tightly-buttoned, ceremonious coat. The child, he said, was to be buried as an *anginho*, little angel, and he ventured to ask so distinguished a gentleman, etc., etc.—in short, would I come to the funeral ? I went, of course. Half the people in the village were there, most of the crowd barefooted and coatless, but as well-behaved as one could wish. Braz showed me into a room, where musicians were tuning their instruments : a violin, a flute, and a drum. Presently the little corpse was brought in and laid on a table. The women had dressed it in some pretty light muslin, on which gilt stars were pasted ; puffs at the shoulders represented wings ; a paper crown was on the head, and the hands held a paper-covered sceptre. The body rested in a frame or box, like a truncated wedge ; the frame was covered with bright red calico ; the bottom was of cloth, instead of boards. Two boys, pupils in the schools, were deputed to carry the box ; four ribbons, attached to the body, were given to as many men of the party, Braz assigning to me the place of honor, on the right side in front. Now the musicians struck up a lively tune, and a rocket or two whizzed

outside the door ; so the procession filed out, the body following, and the women of the family mingling with the other villagers behind. We turned off through a coffee-orchard, where we had to stoop to avoid the branches. Beyond this, in an open field, the grave had been dug. There was no further ceremony ; one of the boys took the body, box and all, in his arms, and laid it in the grave. Somebody cried that the head was toward the west,—a violation, I suppose, of the usage here ; when this was righted, the cover was laid over the box. Whether the frame was too low, or whether the cloth bottom, resting on the uneven surface, left a projection under the head, certain it is that the cover rested on the child's nose. One of the boys observed this, and stamped it down with his heel, the others looking on unconcernedly. Then every one pulled in a little earth with the hands,\* and Braz left two to fill the grave, while the crowd went back, laughing and talking.

I remained at Curuá for more than a week, and finally left the village, with a small but good crew of three men. Much against my will, I was obliged to leave Antonio behind ; little Feliciano, I felt sure, was too young to brave the fevers and exposure of the upper river, and the father utterly refused to part with him, though I offered to pay for the child's board during our absence. He thanked me for my offer, and went away, finally, with perfect good nature. I heartily recommend him to any traveller that may pass that way.

The river above Curuá varies in width from one hundred and fifty to three hundred yards ; the current, as I found it in October, is moderately rapid, and the channel pretty deep ;

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\* This was an aboriginal custom with certain tribes of the Tupí race ; it is found also in the Old World, and traces of it have survived in our church and masonic burial services.



water slightly clay-stained, gray or brown. After passing the village, the banks, for a long distance, are steeply cut, and lined with varzea woods—rich masses coming down to the water's edge, and leaving only glimpses of the shadowy glades within. Most of the trees are like those lining the main Amazons from the Rio Negro to the Xingú; exogenous species, with only a few palms scattered here and there.

On the western side, this varzea-forest is continuous with that of the highland; to the east, it forms a narrow strip, beyond which there are open meadows extending to Alenquer. At long intervals we passed little settlements on the banks, four or five houses together. I jotted down their sonorous Indian names on my sketch-map, with the points and bends as



The River-shore, Curuá.

we went by them. Even the sand-banks have names; the first is only a few miles above the village, and from thence to the falls, every one is written down in my note-book.

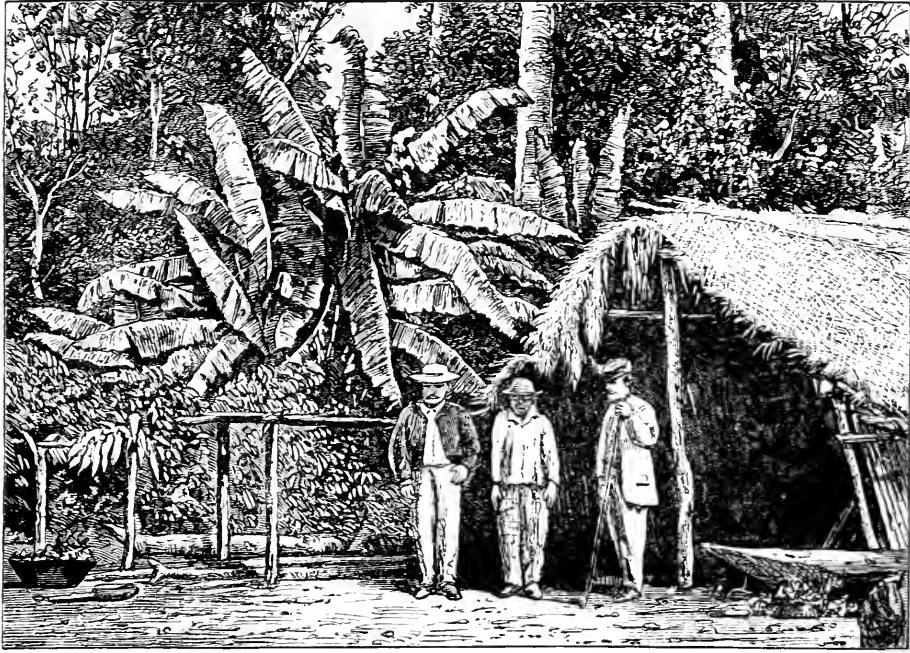
The last houses on the main river are at *Urucuritúa*, perhaps twenty miles above Curuá; here we stopped for the night, the Indian owner receiving us very hospitably. In the end, he agreed to go with me to the falls, and he proved

a most welcome addition to my small crew. The men were all in good spirits, and thoroughly enjoying the trip, so that everything, thus far, was as it should be.

A mile above Urucuritúa, we visited the singular little *Igarapé-pichuna* (Black Creek), which flows out of the Curuá, entering it again five miles below, so as to cut off a large island. This island is not a mere tract of the flood-plain; it contains high as well as low land, and the igarapé is a series of pools and lakes rather than a steady stream; the water is dark with vegetable matter, and covered everywhere with beautiful aquatic plants. A mile from the river we found a fisherman's camp, with festoons of pirarucú drying all around it; the pools were full of fish, which had hardly been touched before, so the harvest was remarkably abundant.

Towards noon we passed the little river Mamiá, flowing into the Curuá from the west; it is navigable only for a short distance. At four o'clock in the afternoon we landed on the eastern side, where was a path running across to the *Igarapé Capai*; here lived the negro, Manuel, of great fame in these parts. Manuel had been chief of a colony of fugitive slaves, which was located for a long time on the Upper Curuá; as these negroes were the only people who knew anything about the falls, I was naturally anxious to secure one for a guide. While at Curuá, I had heard much of Manuel, who lived, so it was said, in the deep woods, fearing to see a white man, lest he should be carried back into slavery; to gain his good-will I had sent him some trifling presents, with word that I would call on him on my way up the river. We crossed now to the igarapé, a sluggish row of pools, like the *Igarapé-pichuna*; there was no sign of a habitation on the farther bank; but after much calling, a canoe appeared, paddled by Manuel's two strapping sons. They were naked

to the waist, and looked wild enough ; I could hardly understand their broken negro-Portuguese. However, they greeted me cordially, and put me across the igarapé to a little hidden path among the bushes ; following this for a quarter of a mile, we came out to a tiny plantation, where were two palm-thatched huts, so small and mean that any



Manuel's Hut.

Indian would have been ashamed of them. Manuel was seated before one hut, smoking a clay pipe, while his little, fat wife superintended a kettle of monkey-broth near by. He rose to meet me—a grizzled old man, slightly bent, but bright-eyed and strong-limbed as you would wish to see. For thirty years at least he had lived in the forest, only visiting the settlements by stealth, and at long intervals.

The Curuá *mucambo* (so they call these colonies) existed as early as the beginning of the century, and perhaps long before. At first it was located near the lower falls, on

the Igarapé Branco ; after an inroad of soldiers, the negroes fled up the river, and established themselves far above the falls ; years later they were driven out again, and then they fled still farther to the unknown interior. They had plantations of mandioca, and the river gave them plenty of fish ; gradually new parties came to join them, until the mucambo numbered two hundred souls or more. Sometimes they came down to Alenquer by a secret path through the woods, entering the village at night to exchange their forest produce for knives, guns, powder, etc. ; certain merchants had a regular trade with them, always carried on clandestinely, of course, but every one knew that such a business existed, and two or three men were strongly suspected of having a hand in it.

In 1876, people heard with astonishment that the Curuá *mucambistos* had voluntarily given themselves up to the authorities at Alenquer. The reason given was, that pernicious fevers had appeared above the falls, carrying off a large number of the negroes. Be this as it may, a great wooden canoe appeared at Alenquer, with one hundred and sixty-seven fugitives on board. The most of them were returned to their masters ; I was told that those who had been born in the mucambo—a large number—were set at liberty. Manuel was freed, and this, with other circumstances, led to the pretty general supposition that the fevers, after all, were not the prime cause of the exodus. It was whispered that the mucambistos came down on Manuel's representation that they would receive their liberty ; that his own freedom was the price of his treachery. I could not discover if there was any truth in these rumors ; the old man sedulously avoided all allusion to the subject, and I did not care to irritate him by useless questions.

There was still a remnant of the colony left above the falls. The *Delegado de Policia* at Alenquer sent a party of soldiers to dislodge them, and they did finally succeed in bringing them all away; but not until the soldiers, and negroes too, had suffered fearfully from the fevers. Many died; not one of the soldiers, it is said, escaped without a long sickness.

There are other mucambos scattered about the Amazonian tributaries; one, on the Curuá de Santarem, numbers some hundred souls.\* But the most extensive of all is on the Upper Trombetas. If we can believe the common report, it contains over two thousand negroes, many of whom have never seen a white man. Several attempts have been made to break up this village, but each expedition has returned with fever and disappointment; the negroes burn their huts and fly to the woods on the slightest alarm. The fugitives know the country, but the soldiers are utterly ignorant of it; they wander vainly about the rapids until the dreaded ague seizes them, and they are glad enough to get away with their lives. Obidos merchants enrich themselves, trading with the fugitives, who come down at all seasons, and even in broad daylight, bringing tobacco and forest drugs for sale. Sometimes they are recognized, but they always get away in time, and the traders give early warning of any fresh raid. It is said that these Trombetas negroes have indirect communication with Guiana, trading through the medium of Indian tribes who inhabit the mountain region.† The Trombetas

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\* Recently, I am told, this colony has been driven out by an incursion of Indians from the interior.

† It is so stated in a letter of João Maximiano de Souza, leader of one of the expeditions against this Trombetas colony. The letter was published in the "*Baixo Amazonas*," a Santarem journal.

mucambistos are greatly feared by the Brazilians, who declare that no man's life is safe among them. However, a friend of mine visited some of their villages, and he found them very well-disposed people, not a little afraid of their guest. Let us hope that when the emancipation law has done its work, these half-savage villages may become useful and civilized communities.

Manuel would not go with me ; he was old, he said, and could not brave the rapids again ; besides, he must make a clearing for next year's planting. Luckily, however, I found another negro here, one Rufino, who had been born in the mucambo, and was therefore free. After much talking, I persuaded him to go to the falls with me, but he declared that my canoe was too large for the ascent ; it would have to be dragged around the rapids, and with my small force this would be almost impossible. I had, indeed, tried to get a smaller canoe for the falls, but none was to be had at Curuá. It was now too late to remedy the error, and I resolved to go on with the boat I had, trusting to find the obstacles less formidable than they were reported. I have since regretted that I did not go back to Curuá, or even to Alenquer, for a small canoe.

We camped, for this night, by the Capaú path ; luckily, I had a mosquito-net to throw over my hammock, but the men suffered grievously. In the morning we were off betimes, making quick progress now, with five stout paddlers. The river, through all this region, is shallow, with numerous sand-islands. In long dry seasons, it is reduced to a mere row of pools, with a thin stream connecting them. The flood-plain is narrowed, so that little points of terra firme appear at short intervals. I never had any difficulty in recognizing these points ; even when they were hardly raised

above the varzea, the changed vegetation was an unfailing mark. The varzea woods are darker and more varied; there are urucury\* and marajá† palms, taking the place of the great uauassús‡ and inajás§ of the terra firme; above all, the giant Brazil-nut trees always indicate high land, even far back from the river.

Shortly above Capaú, Rufino pointed out some deserted houses, where the mucambistos had lived for a time, after they descended the river. At this place, *Pacoval*, I made a lucky geological discovery. There were banks of clay by the river, and I noticed two or three bits of shale rock cropping out from it; digging away the clay, I uncovered a large bed of the shale, much decomposed, but full of beautiful fossil-shells, all of the Carboniferous Period. On my return, I made a very large collection here.

I found fossils, also, on the great sand-bank called *Praia Grande*. The bank was more than half a mile long, dividing the river into two channels; portions were high above the water, and covered with bushes and small trees; on the lowest parts there was only pure, white sand, with little rows of pebbles at intervals. Here I filled my hat with nicely preserved, silicified fossils; they were lying loose on the surface, and had evidently been washed out from some limestone layer above, for I found fragments of the rock still adhering to them; but the limestone must have been under water, for I could find no trace of it along the banks. The fossils were like those of Itaituba, on the Tapajós; no doubt they belong to the same great layer of limestone, which runs through the whole Lower Amazons.

It is curious to note the sorting power of running water in

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\* *Attalea excelsa*.

† *Bactris*, sp.

‡ *Attalea speciosa*.

§ *Maximiliana regia*.

such places. Here, as in the Amazons, the sand-banks were always separated from islands of clay and mud on the one hand, or of stones on the other; coarse sand was in one place, and fine in another, and the pebbles were gathered into little heaps and rows. You will see something of the same thing along pebbly and sandy shores in the United States.

The men had been making a more satisfactory gathering than fossils and pebbles. Rufino was at it first, probing the sand with a sharpened stick for the delicious turtle-eggs. Where the stick came out stained with the yolks, he went down on his knees, and scraped away the sand until the treasure was uncovered: twenty-five, thirty, even forty white eggs, with a flexible covering like parchment. These were the *tracajás*'\* eggs, oval in shape, and not much larger than those of a pigeon; but sometimes a *tartaruga*'s† nest was discovered, and then there was a rush for the prize; the eggs of this turtle are nearly as large as hens' eggs, perfectly spherical, and often we found a hundred and thirty or more in one hole. We boiled them with our fish and game; only the yolk hardens, and it is very mealy and delicate. The men ate the eggs raw also, and those containing young turtles were regarded as a delicacy; I confess that my stomach was not equal to these latter. For days I feasted on boiled turtle-eggs, and never tired of them. The Indians come up from Curuá, and even from Alenquer, to explore the sand-banks, and often they return with their canoes full of eggs; it is a wonder that any are left.

We seldom saw the turtles; one or two, that we caught on the sand-banks, were speedily consigned to our kettles.

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\* *Emys tracajá*.

† *Podocnemis expansa*.



The tracajá is twenty inches long at the utmost ; the tartarugas are much larger, even three feet across the shell at times, and one of them will furnish a good meal for ten or fifteen men. The turtles come up on the sand-banks at night, to lay their eggs ; the holes are carefully covered, and every trace of disturbance, and even of the footprints, is smoothed over, so that even the sharp-eyed Indians often fail to detect the nests. The little turtles come up in time, with their mouths full of sand ; they speedily make for the river, and there encounter a host of enemies in the alligators and larger fishes ; they are pursued on land by various birds ; and the old turtles are often seized upon by jaguars, who scrape out the shells as cleanly as a knife could do it. Notwithstanding all this, the turtles are as numerous as they were years ago ; on the Upper Amazons many thousands of them are captured every year and kept in pens for the winter's supply ; the eggs, also, are obtained in immense quantities, and crushed in great troughs to obtain a rich oil which rises on the mass.

As we left Praia Grande, Pedro caught a glimpse of a swimming turtle before the canoe ; in an instant the fellow was overboard after it, amid the laughter of the whole crew. However, he landed his prize very neatly, and was not a little proud of it, as he had a right to be, for it is no easy task to catch a swimming turtle in deep water.

We were out of the mosquito region now ; the little pests keep to lowland channels, and above Praia Grande the banks of the Curuá are all high. So we slept unmolested, camping on a high ledge of rocks by the shore, where the forest was wild and thick. Only the Brazil-nut gatherers and turtle-hunters come up so far ; the whole region is an unbroken wilderness, deserted even by the wild Indian tribes. For at

least a hundred miles to the north, there was not a single human being, tame or wild, red or white or black.

Our afternoon camps were always a pleasure to me. As soon as we landed, Pedro ran to swing my hammock from the trees, and in five minutes a cup of delicious coffee was handed to me. The men, meanwhile, were beating the water for *piranha* fish, or hunting the woods; they never failed to bring something for our dinner—fish, or paca, or motum-bird, or monkey. The game was roasted over the fire; we had mandioca-meal and biscuits, and the men were made happy with abundance of hot coffee and sugar, and a dram at nightfall; they had never fared so well with the traders. With my cigarette alight, I listened to their stories and jokes until the fire burned low and they all dropped asleep.

One morning I found fresh jaguar tracks within ten yards of my hammock; but we were never disturbed, and I doubt if the animals would ever attack a camp in any case. There must be numbers of the great cats in these woods. Several times I saw the smaller, spotted kinds; and once, as we were moving up the river, we noticed a large red panther\* standing on a shelving rock and drinking quietly. Two of the men fired at it with charges of buckshot, and I added a ball from my revolver; but the range was a long one, and the lead rattled harmlessly on the rock. The panther gave a great leap straight into the air, just as you have seen a frightened cat do; then bolted for the forest with all speed, and that was the last we saw or heard of it.

Frequently we saw bands of beautiful brown otters† swimming against the current and raising themselves in the water to eye us curiously. They abound in all of the branch

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\* *Felis concolor*.

† *Lutra Braziliensis*.

ivers. Frequently the young otters are tamed, and one that I saw at Curuá was as docile as any dog, diving and playing with the little naked boys from morning to night. When hungry, it cried plaintively, until bits of fish were brought for it to eat; but the Indians said that it would soon learn to fish for itself.

This part of the Curuá was full of sand-shallows, so that often we had to dodge from side to side to avoid them. The channel was narrower, too: sometimes not more than eight yards across. The picturesque cliffs were all overhung with glorious forest, piled a hundred feet above the ground, and dropping great festoons of vines to the water's edge.

At length we reached a stony shallow, where the current was too strong for the paddlers; the men cut poles and pushed us along easily, until we came to a more formidable rapid above; here they jumped overboard, and pulled the boat through with much shouting and laughter. Half a mile of still water followed, with the ever-increasing roar beyond, until a long line of foam came in sight—the *Cachoeira da Lontra*; we were fairly among the falls.

The camp was made here, for I knew that we had hard work before us; plenty of daylight and fresh muscle we would need for it. The river rushes through a narrow channel, pounding against the great rocks, whirling, and eddying, and leaping down to black caves, and lashing itself into white foam. On the right side there is an immense, flat table of sandstone rock, slanting southwest towards the rapid: the surface worn into deep "pot-holes," and all black with the wash of water during the floods. A little clear brook flows a quarter of a mile over this table, and enters the river just above the rapid. On the other side, there are high cliffs, where I found plenty of fossil shells, Lower Devonian forms,

much resembling those that we used to get in the Oriskany sandstone of New York State.\* Here was work enough for the remaining two hours of daylight. I hammered lustily, surrounded, meanwhile, by swarms of *pium*-flies,† which lit on my hands and face and sucked their fill of blood. The *piums* are much like our "black flies," and belong, indeed, to the same family; the larvæ live in swift-running water; hence the flies are always seen about rapids and falls. Different species inhabit the various tributaries and the Upper Amazons. The Tapajós *pium* always leaves a little drop of blood under the skin, to the great irritation of nervous persons; this Curuá species differs in that the blood oozes out from the wound and collects on the surface, causing no further annoyance. While hammering on one rock, my left hand lay idle for a few moments, and the flies collected on it by scores; when I brushed them away one would have thought that I had a red glove on; the blood trickled down in great drops. However, the *piums* were troublesome only for an hour or two, before sunset, and in the early morning; a bath made all right; we ate our supper in peace, by the light of a blazing fire, and slept quietly, free from the worse plague of mosquitoes.

The rapid was worse than it looked. One of the men went ahead to drag on a long rope. The rest were in the water up to their breasts, I dragging my little with the crew, and holding to the canoe for dear life when I was jerked off my feet. It was a long pull and a hard one, but we reached

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\* One of the most characteristic fossils is a *Rensellaria*, but others are like those of the Corniferous Limestone and the Hamilton Group; so that the horizon indicated would be somewhat higher than the Oriskany. These sandstones were first discovered on the Mãecurú by Prof. Derby, Dr. Freitas, and myself.

† *Trombidium*, sp. ?

the top at last, and paddled on through nearly a mile of still water, to the next *cachocira*.

There was no passing over this. It was a perpendicular fall, twelve or fifteen feet high; horseshoe in shape, like a miniature Niagara. *Bem-fica*, it is well named by the negroes: "Stay-there," "Thus far and no farther." Rufino had warned me that I would never get my heavy canoe by this obstacle. However, I was determined to try, and a shelving sand-bank at the side gave me some hope of success. The canoe was unloaded, and the men were dispatched to the woods for poles and rollers; with these we constructed a kind of corduroy road over the sand. With immense labor the canoe was dragged half-way up, and there it stuck fast; not levers, nor rollers, nor ropes turned about trees, could get it an inch farther. The men worked nobly; I offered them a day's wages extra if we surmounted this obstacle, but they did not need that incentive. After four hours I was obliged to acknowledge that we were beaten. My elaborate preparations had been useless; the one mistake of bringing a heavy canoe had ruined everything. These boats are made of *itauba*, stone-wood, which well deserves its name, for it is intensely hard and heavy. My canoe was none too large for the crew and provisions, but I should have brought two small ones in place of it, or better, perhaps, one made of light wood, like *cedro*.\*

From Rufino I gathered many notes about the Upper Curuá. It flows from the north, through a hilly country, with numerous rapids and falls; two or three days' journey above the last *mucambo* there are open lands, *campinas*,

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\* A pair of light wheels, made to slip under the canoe, would be very useful; but travellers who expect to do good work on the tributaries should have boats made for the service.

stretching up to the mountains, and occupied by a few savage Indians. The negroes had little to do with these Indians, but they gave them a very bad name. I fancy that they would prove no worse than other wandering tribes, who are good or bad according to the mood in which one may find them.\*

We dragged our clumsy craft down to the water's edge again, and reloaded it. Returning through the Lontra rapids, we had a narrow escape from utter wreck. The canoe got across the current, and was dashed against a rock, splintering the bottom and nearly pitching the cargo overboard. Fortunately, the crack was a small one, and we stopped it up with strips of cloth; beyond this we had no difficulty, and before night we were safe in the still water below.

I now determined to explore the little *Igarapé Branco*, which enters the Curuá from the east, just below the falls; the position promised me some important geological results. It is a narrow channel, between high, gloriously wooded banks, the Brazil-nut trees rising over all. The forest is full of old trails; for, wild as it appears, the region is visited

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\* According to Rufino and Manuel, the succession of rapids and falls, beginning below, is as follows; the names were all given by the negroes: 1. Cachoeirinha; 2. Lontra; 3. Bem-fica; then, in close order, 4. Mãe Isabel; 5. Japim; 6. Josepha Torrena; 7. Mundurucú; 8. Brigadeiro, a very difficult rapid. After these there is still water for a day's journey; then follow, 9. Cachoeirinha; 10. Trabalhado; 11. Botamy; 12. Sucurujú; 13. Piranha; 14. Paciencia; 15. Monte Negro. Now again there is a clear space for half a day; then the two rapids, 16. Bahia, and 17. Conceição; still water for a day, or two days, with the single rapid, 18. Botos; following this comes a long sweep in a narrow chasm; this is called, 19. Solapo, and can only be passed by land; 20. Perdido; 21. Chico Mulato; and 22. Tira-faca, bringing one to the site of the old mucambo, which was broken up many years ago; beyond these follow, 23. Parente Joaquim; then a very long stretch of still water, at least a day's journey; then falls again: 24. Furo Grande; 25. Pagão Dezina, which is just below the last negro settlement, now entirely abandoned. Beyond this there are innumerable rapids to the *campinas*.

every year by scores of nut-gatherers. We pushed on for two or three miles, until we came to a shallow; here the camp was pitched; no palms at hand for a thatched hut, and a drizzling rain fell in the evening, so that we were thoroughly wet and uncomfortable. In the morning I waited only for a cup of coffee, expecting to return for breakfast. We followed, on foot, as well as we could, along the banks, probably for two miles; but the forest was thick and matted, and I could make out nothing of the geological section that I was seeking. Turning again to the stream, we began to wade up along the channel, often to our waists in the water, and working against a rapid current; in this way we advanced, I suppose, a mile more, and my geological studies grew more interesting with every step. In the water we worked, the men breaking up great rocks for me; through a pelting shower, and a drizzling rain that followed it; without food all day, for we had brought none with us; soaked, and chilled, and weary, until nightfall, when we returned to camp through the dripping woods, nearly losing our way in the darkness. Everything about the canoe was soaked; with difficulty we lighted a fire, holding a mat over the blaze until it was well started. The little thatched cabin was full of baggage, and it was too dark now to send to the forest for palm-leaves, so a shelter was out of the question. I put on dry clothes, and rolled myself in my blanket until supper was ready; a scanty one, of roast monkey and mandioca-meal, but I ordered unlimited coffee for the men, and gave to each one a dose of quinine; for we were in the very worst part of the fever-region. After a while the rain ceased, but it came on again a little later, and continued until midnight. I kept pretty dry under my blankets, though the men fared badly enough. When it stopped raining I had

coffee made for them again. I have always found that this is the best guard against miasma.

The nut-gatherers about the Igarapé Branco are almost sure to have attacks of ague or pernicious fever, but notwithstanding all our exposure here, none of the party were any the worse for it. When we finally returned to Curuá, a week later, every man was in good health and spirits: João came to me voluntarily, and proposed that we should go to the falls with a light canoe; and the other men would have accompanied me willingly. Among the Indians, especially, I have found that when a workman is well treated he will go to the end of the earth with his employer; only, in a bad situation, he is likely to desert, just as a child will run away from danger. On a difficult canoe-voyage it is better to be familiar with the crew, and allow them to regard you, in some measure, as one of them, but without sacrificing a proper dignity; then they may refuse to go farther, but they will never desert you without warning.

Before leaving this region, let us review the geography of the river and its valley. The Curuá, in all probability, takes its rise on the southern slope of the Guiana mountains, somewhere about lat.  $1^{\circ}$  or  $1^{\circ} 30'$ , N., and long.  $55^{\circ}$  W. G.; it flows, approximately, south. As far as lat.  $1^{\circ}$  S. it is much obstructed by rapids and falls; from the Cachoeirinha down, there are no obstructions except sand-banks, and the river would be navigable for steamboats during the flood season. This navigable portion is about eighty miles long, with all its curves; but a straight line from the falls to Lake Curuá, would hardly measure more than fifty-five miles; the general course, in this portion, is south-southwest. The only tributaries of any importance are the Igarapé Branco, from the east, near the falls, and the Mamiá, from the west, thirty



miles farther south; neither of these streams is navigable. The mouth of the river, in Lake Curuá, is approximately in lat.  $1^{\circ} 53'$  S. and long.  $55^{\circ} 5'$  W. G. Before entering the lake, the river receives a small portion of water through the Furo de Baré, which flows out of Lake Macurá. Macurá receives its water from the Amazons just below Obidos, by the long Furo de Mamaurú. The combined flood emerges from Lake Curuá, at the eastern end, by the Igarapé do Lago, or Igarapé d'Alenquer. This is a deep channel, flowing in a general easterly direction, about fifty miles; receiving Amazonian water by a short channel; and finally emerging into the Amazons, near Lake Paracary, in about lat.  $2^{\circ} 5'$  S. and long.  $54^{\circ} 25'$  W. G. The whole navigable extent, by the Igarapé d'Alenquer, Lago de Curuá, and the river itself, is about one hundred and thirty-five miles. The flood-plain of the Curuá extends far up towards the falls; on the lower course it widens out rapidly, and the terra firme attains the river only at long intervals, as at Curuá; the Igarapé d'Alenquer touches the terra firme only at Alenquer. The Curuá flood-plain meets a great bay of the Amazonian varzea, extending from Obidos to near Lago Grande de Monte Alegre, where it is joined to another great bay at the mouth of the Mãecurú. Opposite the mouth of the Curuá, the Amazonian flood-plain is at least eighty miles wide. We have seen how the outline of this great plain is broken into bays and prolongations. On the Lower Curuá, and towards Alenquer, this irregularity is carried to its greatest extreme, so that the two kinds of land are mingled in inextricable confusion; islands of terra firme are strewn over the varzea, and lakes and bays of the lowland are almost cut off from the main river-plain. I made two flying visits to the region northeast of Lake Curuá. It is full of beautiful

lakes, lying against the terra firme islands ; the islands themselves are generally of hard rock, diorite and sandstone, such as form ridges on the main-land. I never saw a more complicated tangle than this one, of high and low lands, meadow and forest, channels and lakes, swamps and dry lands, all within a few square miles of surface. Yet the distinctive characters of each kind of land are just as sharply defined as elsewhere ; in all my walks here I was never puzzled to distinguish them, though I was passing from one to the other continually. One stretch of varzea meadow, ten miles long and as many wide, is cut off by a chain of these islands. This meadow is the cleanest and smoothest that I have seen on the Amazons ; for miles together one hardly finds a ditch, or a ridge, or a bush. I could not get rid of the impression that the whole district had been sunk bodily into the river-plain, leaving only the ridges to form little islands and peninsulas.

The geology of the Curuá region is as interesting, and almost as obscure, as that of the Paracary-Cujubim district. The coarse Tertiary (?) sandstones and clays, seen at Paracary, occur again at Alenquer, and farther west on Lake Macurá ; north of a straight line drawn between these two points, the rock is Palæozoic, but often poorly exposed, or obscured by ridges of diorite and trap breccia. The general strike of the Palæozoic rocks is about west-northwest, and they dip generally to the south-southeast at a small angle, never more than seven or eight degrees, and often much less. The Devonian rocks rest on hard sandstones, which may be either Devonian, or, more probably, Silurian. The undoubtedly Devonian series includes at least five hundred feet of sandstones and shales ; following these come several hundred feet of sandstone, which may be Devonian or Carboniferous ; and finally the Carboniferous series, which must be

many hundred, perhaps several thousand, feet thick, though the upper portion is worn away.\*

It looks prosy enough on paper ; but I long now for the romance of that wandering, open-air study, piecing and patching together the sections that I found here and there ; comparing this with that, until the whole stood clear in my mind—until a foot of rock was a key to hundreds of feet below it, as an anatomist recognizes a species from a tooth or scale.

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\*The succession of Palæozoic rocks on the Curuá, as far as I have observed them, is as follows, the thicknesses given being approximate. Beginning below :

1. Hard gray or red sandstone, in heavy layers ; thickness unknown, but the corresponding beds on the Mãecurú have been traced through several hundred feet.
2. Sandstones, alternations of soft and hard layers, with Lower Devonian fossils, exposed at the Lontra fall.—30 feet.
3. Layers of hard, light purple sandstone, often with a flinty fracture, and resisting well the action of the weather, so that it forms angular blocks along the river shore. No fossils.—30 feet.
4. Dark shales, more or less sandy.—15 feet.
5. Successions of dark shales and sandstones.—50 feet.
6. Fine, black shale, passing into No. 5. Contains large concretions of a hard, gray, argillaceous rock.—30 feet.
7. Red, sandy shales, full of *Spirophyton* plants. In certain beds there are little nodulose bodies, which may be organic.—10 feet.
8. Similar to No. 7, but without *Spirophyton*.—50 feet.

Thus far we are clearly in the Devonian series. Following these are :

9. A bed of rather coarse and hard, yellow sandstone.—7 feet.
10. Irregular, concretionary, argillaceous rock, reddish in color.—75 feet.
11. Heavy beds of sandstone, either fine and homogeneous in structure, or coarse, and full of pebbles and clay nodules.—35 feet.
12. Hard, fine, sandy shales. The surfaces often appear mottled, and the broken edges show beautiful laminations of greenish, yellow, black and white.—100 feet.
13. Coarse sandstones, often weathering into curious rounded forms.—50 feet.

None of the layers from No. 9 to No. 13 have yielded fossils, and we have no indication of their age. Above them there is a gap in the section, corresponding, probably, to a thickness of three hundred feet. Following this come the Carboniferous rocks, sandstones, and shales, with a bed of limestone near the bottom, indicated, on the Curuá, only by silicified fossils and fragments of the matrix, picked up at Praia Grande.

## CHAPTER XI.

### THE MAECURÚ.

WE have been living at Monte Alegre, D. and F. and myself. D. is an American, geological explorer and fossil-describer, and thoroughly good fellow. F. is a young Brazilian, who ought to be a Yankee, for his energy and lack of kid-glovism are phenomenal under the tropics. We three are sitting before the door of our comfortable little house, chair-legs two inches deep in the sand; handkerchiefs around our necks to keep off the mosquitoes which will soon appear; fragrant wreaths ascending from our cigarettes.

But, before we go farther, let me introduce to you the port-village at *Monte Alegre*, Joyful Mountain. The mountain itself is just behind us, and the village proper is on top of it, half a mile away; this *porto* is built on a great sand-beach, fronting the canoe-landing and steamboat anchorage. There are adobe-houses, one story high, whitewashed until they are a degree more glaring than the sand; one line fronts the beach, and others, behind, struggle up the slope in the outlines of two streets; but there are no pavements, and the buildings look as though they had shifted a little with the wind-blown surface. Sand ankle-deep in the roads, broiling hot all day, white like snow in the moonlit nights; but the hillsides beyond are wrapped with cool, green man-

bles, and the tucumá-palms nod merrily to the east wind. Half a dozen trading canoes are anchored in the river, and smaller boats are pulled up on the sand. Three hundred yards across the channel there are beautiful, green varzea meadows, with a few trees along the banks; up and down the shores are well wooded. As we sit now in the sunset, the fishermen begin to arrive from the neighboring lakes, and about the shore there is that subdued activity that always precedes the close of the day. The little shops are filled with customers—Indians, and Portuguese, and negroes; people are sitting in front of their houses, as we are, smoking after-dinner cigarettes, and chatting quietly. Good people are these at Monte Alegre; men with hearts a thousand times greater than their purses, for the village is not a rich one, as the world goes. Whatever prosperity it has, comes from the pirarucú fisheries of the neighboring lakes, and the few herds of cattle on the campos; perhaps I should add the painted calabashes, which the people ornament very prettily and export to all parts of the province. Agriculture hardly exists here. Near the village the land is unfit for cultivation; neighboring Indian settlements have their plantations of mandioca, but these rarely produce a surplus for sale. Even oranges come from Ereré, six or eight miles distant.

The upper village is about three hundred feet above the port; you think it a thousand, toiling up the steep hillside road, and wiping the perspiration from your brow. The road is washed into great gullies, so that it is hardly passable for horses. Half-way from the bottom there is a little spring, flowing across the road, and into a hollow below, where a great tub is placed to receive the tiny cascade. Here the water-jars are filled, night and morning; all day the sandy

slope is lively with washerwomen of every shade ; and at twilight the men and boys of the village come here to bathe, after their day's work.

The hill is worth climbing, if only for the glorious view that one has from the summit. You look off over the lakes and channels and meadows of the lowland, and across to the



Looking over the Lowlands from Monte Alegre.

Amazons, and the blue terra firme of Taperinha and Santarem. Westward there are rugged hills of the *Ereré* chain, and lesser ones sweeping around to *Tajuri* on the north, the highest of all, with its dome a thousand feet above the river ; no great elevation, it is true, but in this flat country the hills appear like mountains. To reach *Ereré* or *Tajuri* you would have to cross a great tract of sandy campo, like that of Paracary and Santarem ; even in the village the ground is sandy and bare, and the few trees in the outskirts are campo

species. The great square has no trees at all; the houses around are neatly whitewashed, and there is a really handsome church, the finest in the province, it is said, outside of Pará. It was built a few years ago, to take the place of a tiny chapel which is still used for minor services.

To return to our little party at the port village. We are discussing the pros and cons of a proposed trip to the river Mâecurú. For a long time our hearts have been set on this journey. The Mâecurú has never been explored; we only know that it flows through the blue hills which we have seen, looking northward from the top of the Ereré mountain. Every geologist gravitates to a hill country, as a duck does to water. What if the journey be a hard one, with possible danger and certain discomforts; we have tangled questions to solve, and the hills promise all if we can but reach them. "So," says D., giving the final verdict, "we will go to the Mâecurú; Sr. Valente has promised us a canoe; the river is low now, and we have at least three weeks to spare. The only difficulty that I see, will be to find men for the crew."

I agree, of course. F., who has been studying English, says, "Very good." D. produces his tobacco-pouch, and invites us to roll fresh cigarettes, mildly adding: "Let's liquor:" which phrase is intended for F.'s benefit; the liquor is very innocent ginger-beer, sold in a neighboring shop. F. stares and says, "Go wesht." You must know that we have been tormenting this Ollendorf-student with a series of very idiomatic, American-English phrases; a few he has learned, and throws back at us in random shots, sometimes hitting the mark, missing it comically when he half comprehends. But you should know F. to like him as we do; all our chaff cannot ruffle his steady good-nature; and beneath it there

is a quick intellect, that will yet make him known among his countrymen.

It takes us two or three days to find men, and to arrange supplies for the voyage; the canoe must be calked, and letters must be written, and our time is well filled until we say *adeos* to our good friends, and embark from Monte Alegre. The boat is rather lighter than the one I used on the Curuá trip; barely large enough, in fact, for ourselves and luggage, and the fossils we may bring home. We have three men, and are depending on the lower Mãecurú settlements for another. Altogether, we are well started.

Within certain limits the *Rio de Monte Alegre* bears the same relation to the Mãecurú, that the Igarapé d'Alenquer bears to the Curuá. Like the Alenquer, it is a lowland stream, flowing eastward out of a lake which receives the highland river. In fact, it is a part of the Mãecurú, and the Indians often call it by that name. Their own name for the whole river system is *Curupatúba*, Many Ports.\* There is a *parand-mirí*, the *Paituna*, which leaves the Mãecurú above the lakes, and enters it again just above Monte Alegre; we determine to ascend by this route, and return by the lake, thus completing our survey of the lower river.

For a mile or more, the river passes by high woods—banks of terra firme on the northern side, contrasting strongly with the meadows that stretch away southward. We stop at the little settlement of *Surubijú*, where a clear-water stream

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\* Sr. D. S. Ferreira Penna (*A Região Occidental da Provincia do Pará*, p. 125), says that the name Mãecurú is applied only to the highland river; after leaving the lake it takes the name *Cururuhy*, until it receives, on the left, the *Igarapé Apára*, when it is called *Curupatúba*. As regards the common usage, this is a mistake. I have heard the names Mãecurú and Curupatuba indifferently applied to either river. Rio de Monte Alegre is the lowland stream.



flows down from the campo. Here are manufactured many of the painted calabashes of which I have spoken. The women are constantly engaged in preparing them ; generally coarse, cheap kinds, but occasionally they spend whole days in putting on really elaborate and artistic designs. The calabash-trees\* are planted all about the houses, and we see the great fruits, like green cannon-balls, attached by short stems to the branches. The fruits are cut in two from stem to apex, and the white inner pulp is carefully scraped away ; to do this thoroughly, the shells must be soaked for a long time in water. When they are perfectly smooth, they are painted with a solution of *cumatí*-bark,† which, being exposed to the fumes of ammonia, becomes a brilliant black lacquer, proof against hot water and rum, and very durable ; introduced into the United States, this *cumatí* would be invaluable for certain kinds of work. The prettiest calabashes, to my thinking, have only this black coating, with the patterns scratched through it, so as to show the white shell beneath. The painted specimens are of various colors and patterns. Certain bright clays are used for the yellow and gray tints ; annatto gives the red, and indigo the blue ; frequently, bits of gold-leaf and tinsel are fixed to the varnish, with gaudy effect. Besides the native designs, natural objects are sometimes imitated, and a common pattern is the Brazilian coat-of-arms. Baskets, spoons and closed jars are made of the calabashes. Some of the more elaborate ones are sold for two or three milreis (one dollar to one dollar and fifty cents), and even more ; the common ones can be obtained for a few cents.

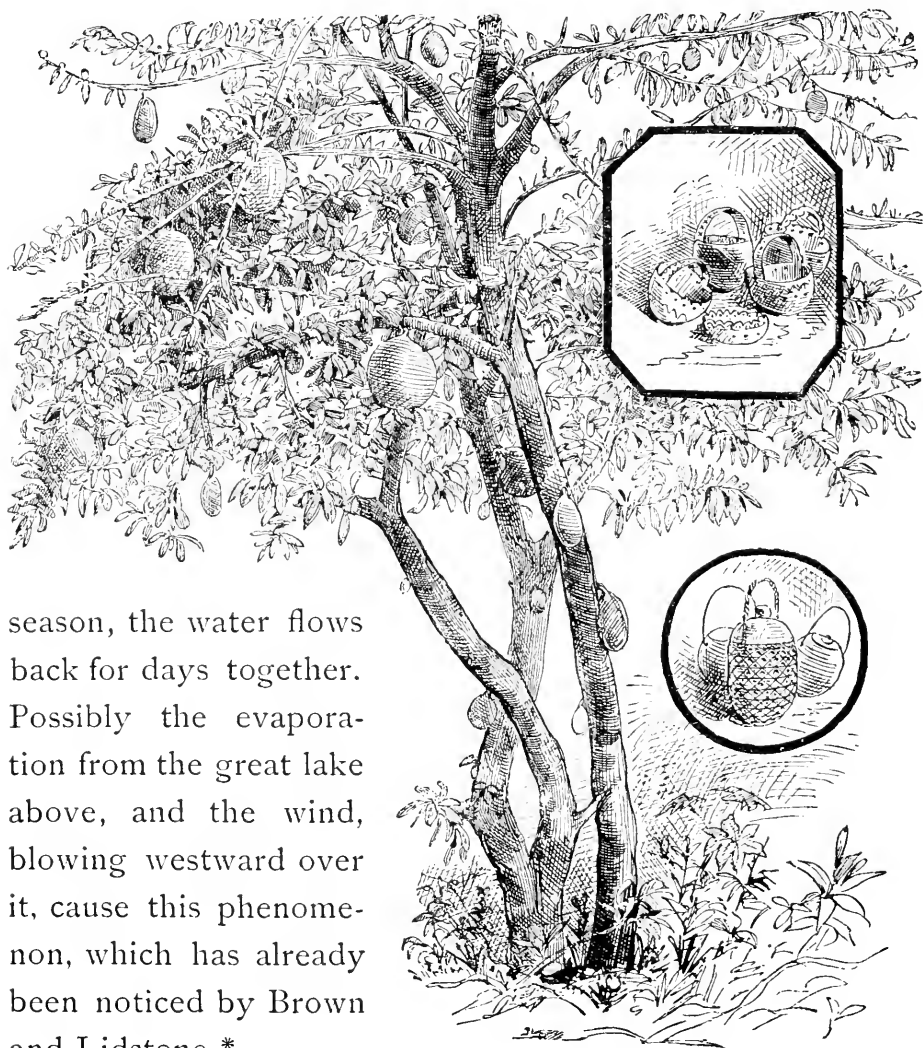
Leaving Surubijú, we turn away from the highland ; the

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\* *Crescentia cujete*.

† *Apocynum follicularis*.

river is now a typical lowland channel, two or three hundred yards wide, and deep enough for any of the river steamboats. The tide is felt here, strongly : for an hour at a time the current sets in from the Amazons. It is said that, in the dry



Calabash-tree.

season, the water flows back for days together. Possibly the evaporation from the great lake above, and the wind, blowing westward over it, cause this phenomenon, which has already been noticed by Brown and Lidstone.\*

Three or four miles above Monte Alegre, we leave the main river and turn into the Paituna. At the mouth, this side-channel is rather more than a hundred yards broad, flowing, with a considerable cur-

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\* Fifteen Thousand Miles on the Amazon, p. 24.

rent, between broad meadows, with low banks at the water's edge. There is no continued forest here; clumps of trees grow on either side, among thickets of mimosas and weeds. Marajá and javary palms nod at the water's edge; beyond, on either side, there are small lakes and numberless pools, occupying half the surface; but we can see only the moving grass, interrupted occasionally by the mouth of a little igarapé.

The white herons\* have gathered here in great flocks; as we come up, they spread their snowy wings and fly a little way, but soon light again in the shallow water; often a hundred are in the air together, like an animated snow-storm. With these are egrets† and bitterns;‡ blue herons,§ sometimes, and beautiful roseate spoonbills.¶ Black divers¶ swim with their heads and long necks out of water, but ready to dip under at the least alarm; flocks of ducks appear now and then—either the large, black *pato*\*\* or the smaller, prettily painted, gray *mareca*.†† Among the bushes there are numberless small birds, and rarely a great hawk, or an *alencorne*, unicorn-bird,‡‡ with a long bristle or horn on its head. Capibaras run on the shore; lazy alligators lie with their heads above the surface; fish leap from the water; bright dragon-flies dart about among the reeds. Turn where you will, there is some new phase of this overflowing animal life; strongly in contrast to the dark forest, where the birds and insects hide themselves, and you seem walking in a land without motion or sound, a wilderness of trees alone.

Shortly above its mouth, the Paituna receives the little *Igarapé d'Ereré*, which flows down from a range of hills on the north. These hills form a crescent; first there is *Ereré*,

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\* *Ardea candidissima*.

† *Ardea alba*.

‡ *Ardea exilis*?

§ *Ardea Herodias*.

¶ *Platerhynchus*.

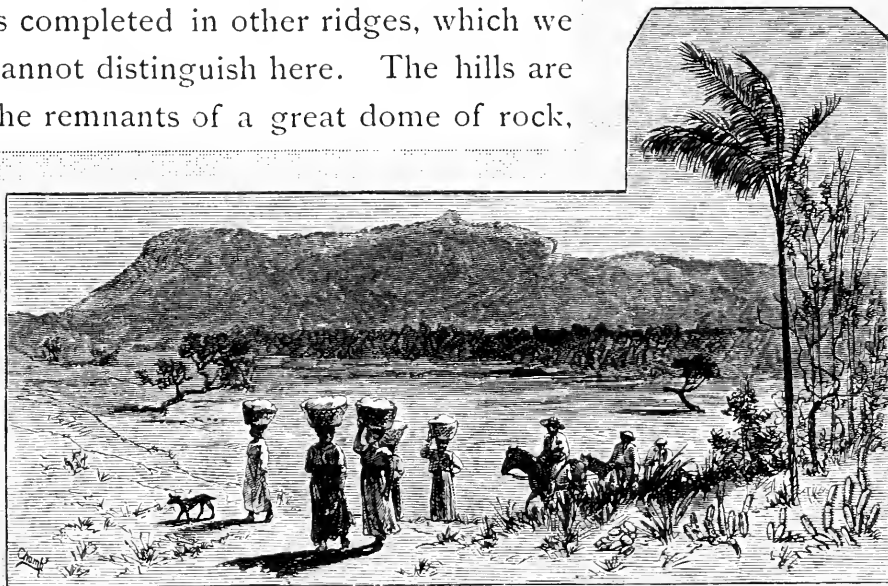
¶ *Plotus aninga*.

\*\* *Anas moschata*?

†† *Anas autumnalis*.

‡‡ *Palamedea cornuta*.

nearly a thousand feet high, with the long spur of *Paituna* stretching off into the lowland ; then *Arochí*, and the conical peak of *Machirá*, and the lower hills of *Paraizo*, *São Julião*, *Urucury* and *Brutin*, sweeping around by the *Mãecurú*. In the other direction the curve can be traced still farther, through the low ridges of *Uacaré* and *Airi* to the rock-mass of *Tajurí* ; thence, probably, the circle is completed in other ridges, which we cannot distinguish here. The hills are the remnants of a great dome of rock,



Serra d'Eréré, from the Northeast.

the core of which has been washed away, leaving the plain of *Eréré* in the middle ; all through the range we find sand-stone strata, dipping away from the plain.

The *Paituna* is excessively crooked, and it varies greatly in width. Often there is a narrow channel, through flooded meadows on either side. The whole country is full of lakes, whereof the largest are no more than a mile across. We turn off from the main channel at sunset, to seek a shorter passage through these lakes ; the men push the boat through the grass with their long poles, for the land is so low here that it is still covered with water, although it is late in Au-

gust, and the flood season is passed ; these meadows are dry only during two or three months of each year. The lakes and pools are covered with pontederias, and great, white lilies. Once or twice we pass a *Victoria regia* ; the buds are just opening ; in the morning the flowers will be seen at their best, but before midday they will change color, and droop, and so sink into the water to ripen their seeds.

It is ten o'clock when we come out into the Paituna again, and seek shelter in a half-submerged varzea house, almost the only one that we have seen since leaving Surubijú. Here we pass the night, uncomfortably enough, for the mosquitoes are numberless ; the house itself is full, and we must swing our hammocks in an open shed.

We are off with the early morning. The channel is wider again, a hundred yards or more, and lined with beautiful, feathery bamboos ; here and there the javary palms appear, and little clumps of thick-leaved trees ; but behind them the meadows stretch away on all sides. The birds are waking to the sunrise ; all their hearts go out in song now, and the bushes and trees are alive with them. Oh, it is glorious here, with the day coming on, and all Nature bursting into a jubilee to greet it !

"Bully, isn't it, F.?" says D. "What ees Bullee?" inquires F., dubiously. I explain, "touroso." (Portuguese, *touro*, a bull : *touroso, nobis*, pertaining to a bull.) F. stares ; D. explodes. "Hit 'im again, old boy," says he ; and F. retorts : "Go and tell dat to de marines." When I am next scribbling at my note-book, D. suggests : "Put it in that 'the tedium of the voyage was whiled away by the charms of intellectual conversation !'"

In one place the Paituna flows within a quarter of a mile of the Mãecurú ; here there is a muddy road, crossing the

meadows to a cattle fazenda on the latter stream. The owner of the fazenda tells us that he has just come from Monte Alegre, by land, in five hours; we have been a day and a half, canoeing through the tortuous igarapé.

As we near the Mãecurú the channel is narrow, and the current is very strong. It is curious to note the varying strength of the current through the igarapé. In some places, where it is no wider nor deeper than here, it forms only a row of sluggish pools, with a barely perceptible flow. I suppose that much of the water passes across the meadows, in this interminable net-work of lakes and channels. The Paituna must have been left by the gradual filling up of a large lake; it lacks the high, steeply-cut banks and regular width of the true Amazonian channels. During the floods, this region is, in fact, a great lake, and the igarapé is only marked by the clumps of trees and bamboos along its edge. In course of time, very likely, it will become the main outlet of the Mãecurú; then the old channel will fill up, or remain as a *furo*, through which Amazonian water will flow into the tributary.

The Mãecurú itself, where we enter it, is a hundred and fifty yards broad, and ten or twelve feet deep; water dark, leaf-stained, but almost free from clay and mud. It is almost as crooked as the Paituna, but the banks are well defined; often high enough to be out of reach of the floods, as on the raised Amazonian borders. We observe, what has often been noticed elsewhere, that there are two types of vegetation, marking the high and low varzea banks;\* on the former, for instance, the urucury palm† grows abundantly, but on the lower ground its place is taken by the javary.‡ As it

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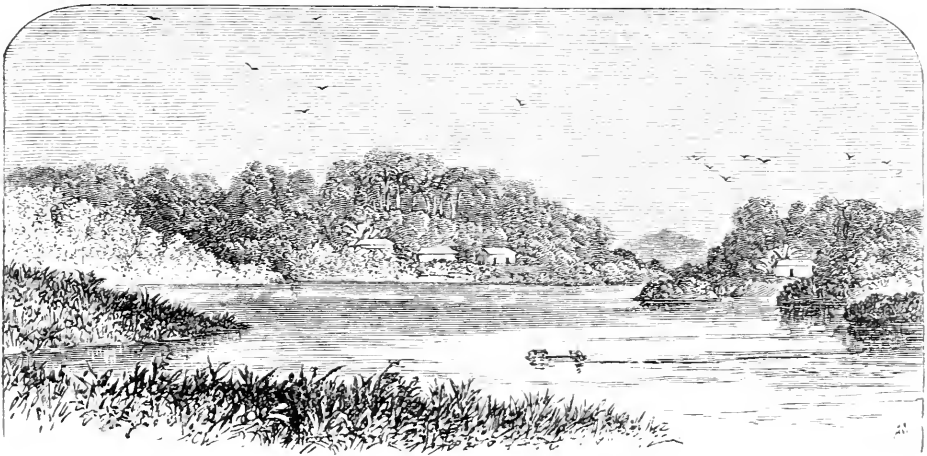
\* Or high *varzea*, and low *ygapó*.

† *Attalea excelsa*.

‡ *Astrocaryum javari*.

generally happens that there are high banks on one side, and low ones on the other, we commonly see the two kinds of palms collected on opposite shores. Rarely, a point of low terra firme comes down to the river, and then the picture is changed altogether ; thick forest takes the place of the palms and bamboos ; the grass disappears along the water's edge, and great branches reach out over it, leaving shady depths beneath.

We pass the little settlements of *Curimatá* and *Pery*, each with three or four thatched houses ; after this there are no more signs of habitation until we reach Lake *Maripá*, six



View on Lake Maripá

miles above the Paituna. The lake communicates with the river by a little, swift-flowing igarapé, which is too shallow for our canoe ; so one of the men explores along the bank until he finds two fishermen, into whose small boat we crowd, the gunwale hardly an inch above the water. A quarter of a mile up the igarapé, we emerge into the lake, one of those beautiful sheets of water that are forever surprising the traveller, when he looks only for dry land or shallow varzea pools. Lake Maripá is almost surrounded by terra firme :

ridges, fifty or sixty feet high, rising steeply from the water in half a dozen places ; but between them there are great tracts of varzea meadow and woods, stretching back far into the interior. At least one great island of high land is cut off, between the lake and the river. The whole region is but another illustration of what we have seen on the Curuá : terra firme and varzea mingled in inextricable confusion, as if the ridges had sunk into the river-plain. Amid all this picturesque confusion, the placid lake spreads its bright waters, reflecting here a rocky, forest-covered point, there a grassy shore. Fish leap up to the sunshine ; the birds call from highest branches ; the Indians love Maripá, not because they comprehend its charms, but because, somewhere in their simple hearts, they have a child's love for all beautiful things.

There are a dozen houses scattered here and there ; we find shelter for the night in one of them, and old Laureço is mightily proud of his guests. Here, too, we pick up another canoe-hand—a young Indian, who has already ascended the river far among the falls. The fishermen and salsaparilla-gatherers sometimes go there, but we cannot find that any white man has ventured above the first rapids.

There is another lake near by—*Lago de Maripá do Centro* ; we make a vain attempt to reach it over the half-flooded meadows ; this, and our explorations about Maripá, occupy half a day, so that it is near noon before we return to our canoe. Up the river again, around an interminable series of bends, which seem always to bring us back to our starting-place. At length we stop, where three or four uprights, still standing, mark the site of an old fazenda ; Maripá (so we have christened our new man) says that it belonged to one Brutin, and from him the little hill near by took its



name. Senhor Brutin, in a tight house, may have slept well enough; but we, who must fight the mosquitoes all night, are much inclined to curse the place and all connected with it. D., it is true, has an army-tent, which he brought from Pernambuco expressly for such a trip; but when we have set it up, we find, to our disgust, that the maker sought only a free circulation under it; there is a foot's space between the edge of the canvas and the ground; fill this with branches as we will, the little torments come in by thousands, and we are soon glad enough to leave the stifling place for our cool hammocks outside. Consider our disgust when, going on a mile or so next morning, we hear the cocks crowing at Maripá! The crooked channel has brought us close to the lake again; we might have walked across by a good path, and passed a comfortable night at our old quarters.

After this, the river is less tortuous; we advance rapidly, stopping only where some terra firme point gives us a little glimpse of the geology. There are no more houses; the campos cease a few miles above Maripá, and now there is only the rich forest, varzea or terra firme, with few palms, but numberless vines, and thick, interlaced branches. The low woods, especially, are beautiful beyond all language; *ingá* and *taixí* trees\* are in full bloom; with them grow *araparys*,† dark branches as dense as thatch, and the leaves imbricated so that hardly a drop of rain can pass through them. The *apuis*,‡ strangler-trees, attract our attention by their strange forms; the *mongubas*§ by their mottled, gray and green trunks, and deciduous foliage; the *imbaubas*|| by their white, branching stems, like candelabras, and their great,

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\* *Inga*, sp. var.

† Leguminosæ.

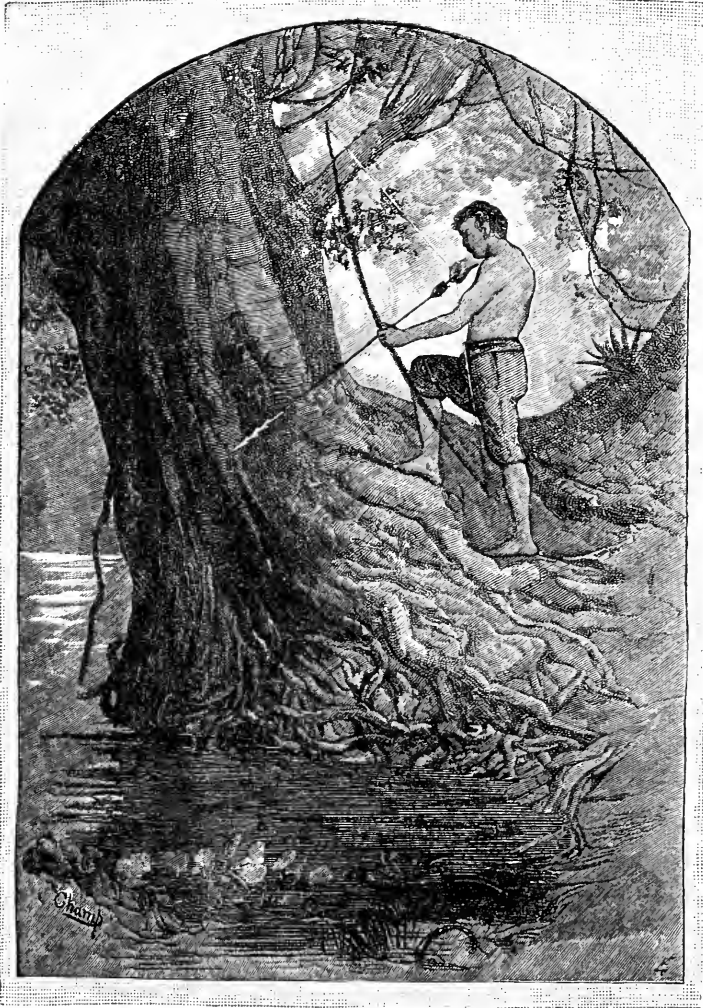
‡ *Clusia*, sp.

§ *Bombax monguba*.

|| *Cecropia*, sp. var.

palmate, silver-lined leaves. Sand-banks here and there are marked by lines of *araçá* bushes,\* half submerged.

Our life settles into a pleasant routine ; at every camp



Indian Shooting Fish.

the men fish or hunt, and our forest-table is pretty well supplied. The fish are generally large *piranhas*, which are so numerous here that bathing in the river is quite out of the question. Occasionally Maripá takes his bow and arrows, and perches on some overhanging

branch or water-washed root to shoot *curimatás* and *tucunarés*; he stands like a statue until a fish passes underneath ; then the bow is drawn, quick as light, and the arrow hardly leaves a ripple as it cuts through the water. Often the shots

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\* *Psidium*, sp.

are unsuccessful, for this kind of sport requires no little skill ; the fisherman must allow for the refraction of the water, or he will certainly miss his mark. Besides the fish, we are often treated to a *mareca duck*,\* for the birds are numerous about the river and its lakes. The young are pretty, plushy things, quite active and vigorous. Once the men shoot at an old duck, missing her, but cruelly wounding some of the little ones about her. The mother only swims off a few yards, calling pitifully, but bravely holding her ground as we come up ; the father appears from the woods and echoes her cries. I think even our Indians are struck with remorse, for they do not molest the birds further.

Our course now is nearly due north, by woods all aflame with the *taixi-blossoms*. Little streams flow in, here and there, from lakes on either side. Maripá points out the *Igarapé de Turará*, and, farther north, the *Igarapé de Cujubim*, outlets of lakes which we have already visited from Paracary. None of these lakes are very large ; they occupy crooked *varzea* bays, which extend so far back from the *Mãecurú* that they seem to have no communication with it. Only as we near the falls, the *terra firme* draws in to the river-banks. Now the current is so strong that the men have hard work to force the canoe against it ; the channel is shallow, with shifting sand-banks here and there, where the turtles will come a little later to deposit their eggs.

On the morning of the fourth day after leaving Maripá, we hear the roar of the rapids. Two miles yet we have to paddle around the curves ; then we see a great sheet of white foam, sweeping half a mile down the long, rocky slope, and whirling into the still water below. The main

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\* *Anas autumnalis*.

channel here is three hundred yards broad, and there are three or four narrow side-channels, cutting off little wooded islands; through them the water rushes like a millstream: a pretty sight, but the navigation appears very dubious. However, we choose a promising channel and push ahead, the men paddling with a will. We might as well try to row up Niagara; we cannot even get into the main rapids, such is the force of the current below. Another channel is tried with like success; it becomes evident that our antagonist is a pretty formidable one.

Crossing to a small channel on the eastern side, we unload our canoe, and make another attempt, pulling along by the branches on shore. This answers very well until we come to a huge tree, which has fallen directly across the current, and lodged on some rocks far out in the swift water; we cannot pass this obstacle, and it is clearly foolhardy to think of getting around it; so we drift back helplessly to the still water.

Next, we try to drag the canoe over by land, but we are stopped in the outset by a steep bank, beyond which, if we could ascend it, the way is clear enough. After four hours of very hard work, we only succeed in getting one end of the heavy canoe to the top. The men are tired and discouraged, and the prospects for ascending at all look very gloomy.

It is four o'clock in the afternoon. As a last resource, we resolve to attempt the broad main channel, though the very sight of it is chilling. Leaving all the baggage on the bank, we cross to the western side; the men jump into the water, struggling for a footing among the rocks, and dragging the canoe along, inch by inch. The first line of foam is passed, and the crew are shouting like demons. We are overboard with the rest, water up to our waists, to our breasts, over

our heads in deep places, but we cling to the gunwale, and somebody else is sure to have a footing; so we advance, steadily. "Piranha, don't bite my foot!" shouts Joaquim; but luckily there are no piranhas in the swift current. A wall of rock rises before us; we pull the canoe half-way across the rapids, until we find a gap, through which we struggle somehow; water seething and boiling, and rushing on madly; dashing spray into our eyes, dashing big waves against our bodies, dashing, gurgling, hissing; roaring and foaming about the black boulders, and we like black specks in the midst of it all, but always struggling upward. So, in an hour's time, we stand at the top, dripping from head to foot, cheering, shaking hands, singing. Well, it is no slight victory, this one over the *Pannacú* rapid. Looking down the white slope, we wonder how we ever ascended it.

F. seizes the brandy-flask, and remembering yesterday's Ollendorf-lesson, remarks: "I am neither ashamed nor afraid. I am thirsty." We shout approvingly, for everybody is good-natured now. After supper the men get a reeking bowl of punch, that makes their eyes water. We sleep within sound of the rapids. Once, in the night, a troop of howling-monkeys pass over our heads, and the woods echo with their lugubrious concert. We have heard them often along the river-banks, and once or twice they have appeared on the tree-tops, dodging behind branches, and setting up a howl of delight when we are well past them.

Now all obstacles ahead seem light; and in fact, the first succeeding rapids are comparatively easy ones. We pass six this day, and three during the next forenoon. But the eleventh rapid is a very hard one; more spiteful than the first, though it is not so long. We are well up to our work now; the men go at it, laughing, and even when we are in the very

midst of the foam, they let go their hold to dive into the pools and scramble over the black rocks. Once we have to go up a sheer fall of three feet or more ; here they work like giants, and actually lift the heavy canoe over the obstacle. It is a good day's work, we agree ; so the camp is made here, and we sup royally on a great *mutum*-bird\* which the men have shot. In the morning we go on, through a clear channel now, for ten miles or more ; the banks high, and gloriously wooded, with cliffs here and there, and picturesque hills. The river is two hundred yards in average width, and quite deep.

We enter the rapids again, where they come in quick succession along the channel, and each one, it would seem, worse than the last. The fifteenth *cachoeira* is a very bad one. We work with the men, up to our breasts in the water ; once, in the very swiftest current, an electric eel passes twice by my knee, each time giving me a sharp shock. I dare not let go my hold of the canoe, and it is impossible to scramble into it from the swift water ; I bear the battery as well as I can, making a wry face, to be sure, but I am none the worse for the little adventure. These eels, in the rapids, must be different from those that live in the pools about the lowlands ; the Indians call them *puraké*, and speak of several kinds.

The sixteenth fall is long and strong, and the men have to go overboard again. The first turn beyond this brings us to the seventeenth fall, a smooth, glistening sheet, sweeping half a mile around a curve, without a single rock to break its force. It is clearly worse than any we have passed. We stop on the shore, just below, to breakfast and hold a council

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\* *Mitu tuberosa*.

of war. The steady hiss of the current almost drowns our words; the men are whispering together, with dissatisfied faces.

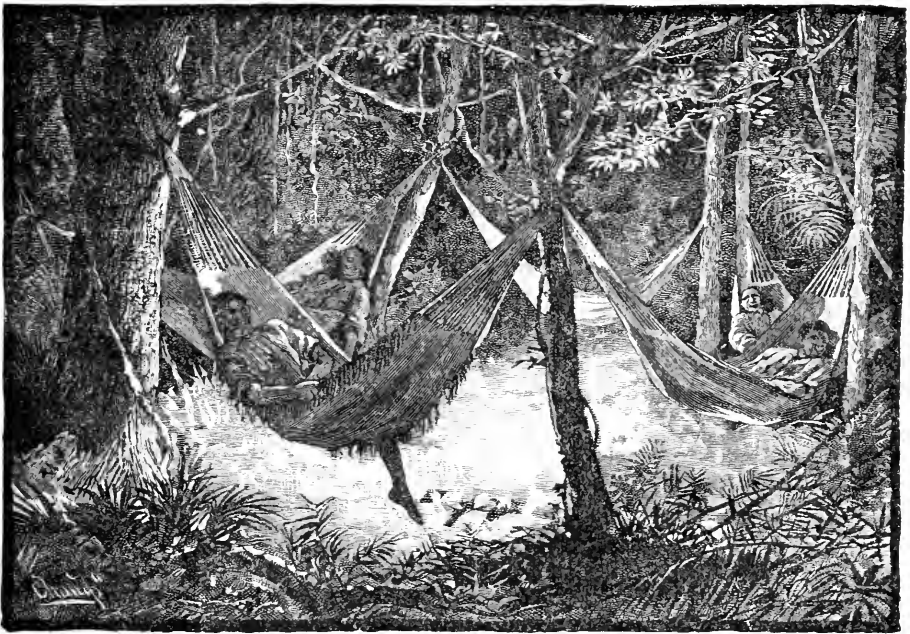
D. wanders off with his geological hammer, and presently calls to us triumphantly; among the sandstone boulders along the shore he has found a block full of Devonian fossils. In a moment we are all at it, turning over this stone and that, generally finding only the hard, sterile rock, but sometimes hitting on a rich fragment, with scores of beautiful shells. Now, we have been passing through a descending series of rock; that is, the strata dip to the south or southwest, and we, going north, have been continually finding older rocks. It happens that the strata seen just below here correspond to the lowest rocks that we have seen near Monte Alegre; beyond this, therefore, we can look for real discoveries—rocks that we have not yet seen. The fossiliferous boulders have clearly been washed down the stream; perhaps from the bed of the rapid itself. At any rate, we can hope to find this, and still older strata, above, along the banks. The fossils decide the question; we will attempt the *Tca Pichuna*\* rapid.

The luggage is tossed out, and the men are stripped to their work; seven of us in all, we drag the canoe to the base of the long incline, keeping near the eastern shore, and aiding ourselves as we can, with the branches that droop over the current. The water is above our waists, running now with immense force; bottom of smooth, hard rock, with rolling pebbles that give no foothold. We struggle on for a few yards; the outside men are washed off their feet, and those

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\* This appears to mean "Black Village." There are stories of former negro villages on the Mäecurú.

near the shore can hardly keep their places by holding to the boughs. D. shouts to one to get into the boat ; he does so with some difficulty, and manages to secure the bow with a turn of rope about a branch ; with this we get a little resting-spell. Now the strongest man is sent ahead with another rope ; he clammers along the shore, holding to roots and twigs ; once nearly washed away, but eventually he makes his rope fast to a tree, and we in the boat pull on it, hand over hand, until we bring ourselves up to the knot ; in this



Camp Scene on the Mãecurú.

way we have advanced twenty feet, but the very sight of the torrent about us is enough to turn one dizzy. Never mind : we take a little breathing-spell, and then repeat the manœuvre. So, by the *espia*, and by wading in less dangerous spots, we make our way up at a snail's pace. After four hours of this labor we near the top of the rapid ; already we are congratulating ourselves that the worst is over, when



some unlucky genius prompts one of the men to aid matters by pushing with a pole away from the bank. In an instant the current catches us, and whirls us into the very centre; somebody springs to the helm, but it is too late to reach the bank again; down we go, at express-train speed, reaching the bottom again in rather less than three minutes; fortunately there are no rocks in the way.

It is too late for another attempt to-night, so we camp on the shore, tired and gloomy. However, we are at it again next day, taking now the opposite, and convex side, which we should have tried in the outset. It is a hard pull, but the rapid is beaten at last, and to crown our triumph we find the fossil-beds that we were looking for, shortly above, at the nineteenth fall; better, even, than the fragments promised.\* We stop here only a little while, leaving more extended explorations for our return.

Just above the Tea Pichuna rapid, we have passed a small tributary on the eastern side, the only one that we have seen since entering the falls. Above this there are rapids again, in close succession; the eighteenth a slight one, which we dash through merrily; the nineteenth a half-mile-long mass of foam, which looks very bad, but proves to be quite easy, because we readily get foothold among the rocks. The longest rapid of all is the twenty-second, a good three-quarters of a mile from top to bottom, and full of ugly-looking black rocks; however, we have learned that these are aids rather than hinderances, because they give us resting-places and supports for hands and feet; we are fearless now, and think

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\* This was the first discovery of these rocks, afterward identified by myself at the Lontra Rapids of the Curuá; I have reversed the time-order of the two explorations. The geological results of the Mãecurú expedition are in the hands of Prof. O. A. Derby, of Rio de Janeiro.

nothing of venturing out into the current to hammer at some promising ledge, or capture a bright-colored insect. Many of these insects about the rapids are of peculiar species, the larvæ of which live in swift-running water; the pretty dragon-flies and bronze-winged *Agrions* are especially conspicuous. My boxes are soon full, and I only regret the lack of time and space to amass a large collection in this unknown region.

We are passing now between sandstone cliffs a hundred feet high, or hills covered with heavy forest. Sometimes we catch glimpses of a blue hill or mountain, five or six miles yet to the north.\* But we are not fated to reach it on this voyage. It is more than two weeks since we left Monte Alegre; the provisions are nearly exhausted, and right ahead of us appears the twenty-sixth fall, a sheer leap of twenty-five feet. We might, indeed, pass it by land; there are no high banks in the way; we find an old path that may have been used by salsaparilla-hunters to drag their light canoes over. But the men rebel outright; they urge, truly enough, that they never agreed to go farther than this *Pancada Grande*, which is rarely attained, even by the drug-gatherers. For our part, we would be willing to go on for a day or two longer; report has it that there is clear water for a day's journey above this place, and we are always finding older rocks as we advance. But after weighing all the pros and cons, it is decided that we will be wiser to give way to the men and the empty provision-boxes. We stop only for a hasty sketch of the *Pancada Grande*, and a barometrical observation; then we begin our downward journey,

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\* Probably the so-called *Serra de Tititica*, a flat-topped ridge or table-land, faintly seen from the top of Ereré; it must be fifteen hundred feet above the Amazons.

shooting the rapids where we dare to, wading down through the more difficult ones, until we reach the top of the Tea Pichuna fall, where we stop for two days to explore the fossil-bearing rocks that we have hardly examined before.

Let the geologist of a railroad country imagine, if he can, our predicament ; a bottomless storehouse of beautiful fossils, but no means of taking them away except our small, heavy canoe. We select and re-select the most perfect specimens ; trim every one until it can be trimmed no more ; the Indians weave baskets of palm-fibres, and we pack a dozen of them, until we fear to put more in the canoe. The men, meanwhile, have been hunting, and have killed a wild hog,\* so we fare royally, and only regret that we must leave the place so soon. Our collection has cost us two days of steady work, but, as D. says, it is "boiled down ;" perhaps no other collection of fossil shells was ever reduced, in the field, to a smaller bulk.

Now we go racing down the rapids again ; shooting the Tea Pichuna gallantly, but obliged to unload our canoe for one or two of the worst falls below. The canoe itself is beginning to show the hard usage it has received ; there are great dents and cracks in the bottom, and it is leaking badly. However, we go on until the last fall is passed ; safe in the quiet water below, we stop to recalk the boat, lest our heavy load should sink us altogether. So easily all the injury is repaired ; for ourselves, we are as healthy as possible, and we have felt nothing at all of the fevers that rumor had placed about the falls. Doubtless it is very unhealthy there at certain times, but it has assuredly been very healthy during our voyage. The pium flies were abundant about the rapids, and

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\* The *taititú*, *Dicotyles torquatus*.

they have left their marks on our hands and faces, but these will soon disappear ; some of us would be ready to repeat the Mãecurú experience.

We return by way of Lago Grande de Monte Alegre. From the Paituna to the lake, the river is two hundred yards wide, or more, and deep enough for small steamers. The banks are high, and lined with bamboos or clumps of forest. We pass little settlements along the shore ; the largest of these, *Fauarary*, contains ten or twelve Indian houses. It lies on the main road from Monte Alegre to Paracary and Alenquer ; here the Mãecurú is passed by a canoe-ferry, the herdsmen swimming their horses, as they must in two or three other places along the same route. Yet this is one of the longest, and perhaps the most travelled, of all roads in the Amazons valley.

Where it enters Lago Grande, the Mãecurú has formed a long tongue of land, high banks of the river shelving off rapidly to the low, muddy beach of the lake, on either side ; here there is a beautiful grove. Great waves come rolling in with the east wind ; we can just see the southern shore of the lake, a line of forest fronting the Amazons, and breaking up toward the west, where there is a clear horizon. The lake is about twenty-five miles long, and eight or ten wide ; shallow, like the other varzea lakes, but with a deeper channel marking the river-course. At the western end it comes close to the *Tapará*, a side-channel of the Amazons below the mouth of the Alenquer. It is said that Lago Grande is connected with Lago de Paracary by a strip of varzea meadow, with little lakes, where canoes can pass in the flood-season. This strip cuts off a great island of terra firme, south of Paracary : another instance of the irregularity of outline which characterizes this part of the Amazo-

nian flood-plain. On the south, Lago Grande communicates with the Amazons by a single narrow channel, the *Furo de Ricardo*, which is navigable only during the floods. The lake is celebrated for its pirarucú fisheries, sharing the harvest with Lago de Curuá, and Lago Grande de Villa Franca.

The wind is too high to allow us to cross the lake with our heavily laden canoe ; we lounge in the pleasant grove until near sunset, when the waters are smoother, and we can run down to the outlet. There are, in fact, two outlets, which unite shortly below, receiving the crooked little *Igarapé-apára*, through which water flows from the complicated net of lakes and channels and pools about the Paituna. The Mãecurú itself is very crooked below the lake, and it varies in width from two hundred yards to almost half a mile ; the meadows on either side are low and half-flooded, and the banks are not distinctly marked. All this we observe dimly, during our long evening voyage ; when, at length, we reach a herdsman's house on the banks, we are glad enough to forget the mosquitoes and endless channels in our comfortable hammocks.

We are off again by four o'clock in the morning ; all day tediously paddling along the monotonous channel, which here hardly varies from its regular width of about two hundred and fifty yards, with a steady east-northeast course. The banks are higher now, with occasional clumps of bamboos or low trees : beyond, the meadows stretch southward to the blue line of forest that marks the Amazonian shores ; to the north they extend to the Paituna and the Ereré hills. The white beach of Monte Alegre comes in sight at length ; it is dusk when we leap to the shore, a soiled and ragged party, but none the less warmly greeted by our good friends. God

bless the Monte Alegreens for their kind hearts and open doors !

To review : The Mãecurú, as nearly as we can say, rises in about lat.  $1^{\circ}$  or  $1^{\circ} 30'$  N. and long.  $54^{\circ}$  W. G. It flows with a general southerly course, through a series of rapids and falls, with intervals of still water, to the Pannacú rapids, near lat.  $1^{\circ} 12'$  S. and long.  $54^{\circ} 18'$  W. G. ; below this the navigation is clear, at least in the wet season. The channel is often very tortuous, but it retains its general southerly course to the embouchure in Lago Grande de Monte Alegre, as nearly as possible in lat.  $2^{\circ} 20'$  S. and long.  $54^{\circ}$  W. G. From the lake it flows east-northeast, until it touches the highland at Monte Alegre ; then east-southeast, dividing just before it enters the Amazons, in about lat.  $2^{\circ} 8'$  S., and long.  $53^{\circ} 35'$  W. G. The whole navigable length of the river, from the lower falls, is about one hundred and fifteen miles ; this includes all the curves, and the lake. Our party penetrated about thirty-five miles beyond the Pannacú rapid, to the Pancada Grande, one hundred and fifty miles from the mouth by the river-curves, but hardly half as far in a direct line. It should be added that these figures are approximations only.

From the lower rapids to Lago Grande, the Mãecurú flows through an ever-widening flood-plain. On the eastern side, where it is bordered by the high Ereré hills, the outline of this plain is pretty regular. To the west the land is very low, and here the irregularities are endless : every little stream that flows into the river marks a great tract of varzea meadow, and swamps, and lakes. The Cujubim igarapé, for example, enters the Mãecurú through a comparatively narrow passage, between two points of terra firme ; but above, this strip of varzea widens, as we have seen, to a tract at least thirty miles long and ten or fifteen broad. So at Turará,

Mimí, Maripá: the whole eastern side is a jumble of meadows and lakes and swamps without number, all flooded during a part of the year, but with points and islands of dry land that almost defy the map-maker by their crookedness.

The parallelism between the Mãecurú and the Curuá is very clear. Both rise on the southern slope of the Guiana Mountains, and flow southward, with many rapids and falls, until they near the Amazons; here they pass through long, irregular tongues of varzea, with small lakes on either side. Both flow through long varzea lakes, which communicate with the Amazons by narrow channels, navigable in winter; both, on leaving the lakes, turn sharply to the east, and northeast, touching the highland at one point, and then turning southeast, until they empty into the Amazons. A kind of parallelism can be traced, also, between the Igarapé de Paituna and the equally crooked Igarapé de Itacarará. But the Curuá differs notably, in that it receives contributions from the Amazons, first by the long channel of the Mamaurú, and again by the short, wide upper mouth of the Igarapé d'Alenquer; the Mãecurú gets no Amazonian water whatever, except during the floods, when the great river flows over into Lago Grande, first from Paracary and then by the little Furo de Ricardo.

D. surveys the well-filled boxes of fossils which we have been packing. "Well, F.," says he, "here we are; and what shall I report about our trip?"

"How's dat for high?" answers F.

## CHAPTER XII.

### AN INDIAN VILLAGE.

THE late afternoon sun shines full in our faces as we toil up the long slope that lies between the canoe-port and the village of Ereré. The landscape is singularly home-like in many of its features: ridgy meadows, with cattle browsing here and there on the young grass; richer green marking the tree-lined water-courses; outlined against the sky, a rugged mountain mass, such as one may see almost anywhere in western Massachusetts; and to the north, range after range of forest-clad hills. But before us the thatched houses of the village peep out from among orange-groves and palm-trees; and down the narrow path come a troop of black-eyed Indian girls, with their baskets of Sunday finery balanced on their heads; they are going to Monte Alegre to attend some church festival.

Ereré is an Indian village, lying to the north of the Amazons, about eight miles from Monte Alegre. The place has been inhabited from time immemorial; probably long before Orrelana made his adventurous voyage down the river, or Caldeira founded Pará. And as the village is removed from the main lines of travel, it happens that the twenty-five or thirty families who remain here have preserved, almost unchanged, many of the aboriginal customs, and those intro-



duced by the early Jesuit missionaries. It is, in fact, a typical village of the semi-civilized Amazonian Indians.\*

The olive-skinned lassies are crossing the brook now, splashing the water a little in fun, and greeting us with a smiling "*Adcos, Senhor,*" as they pass on. Their bare feet come down firmly but softly, never minding the little round stones that cover the path; they wear clean calico skirts and modest sacks, and their uncovered, purple-black hair is caught up with horn combs, or streams down their backs. *Au reste*, one or two of the faces are pretty enough, but the most are plain. An artist might object that the women were too short and heavy for beauty; but over all drawbacks of form and feature, you cannot help admiring the splendid motion of a body untrammelled by laced stays and high-heeled shoes; shoulders are thrown back, and heads are erect under their burdens; and they would march just as well if the loads were five times as heavy. These healthy limbs and supple bodies will bear up for hours unwearied, with the weight of a sack of flour balanced over them; aye, and the girls will dance half the night afterward!

Three or four older people in the troop are wrinkled, but not decrepit; bright-eyed, and firm-footed, greeting us very gravely and politely, and holding their place in the crowd of younger ones with a kind of patriarchal dignity. They make one or two good-natured inquiries, such as naturally arise from the apparition of a party of strange Americans on their quiet roads. Then the group passes on, and we resume our walk.

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\* I have studied these people during several years of almost constant intercourse with them, living for weeks in their villages or making long explorations with no other companions; so it will not, perhaps, be very surprising if my estimate of their character differs from that of certain steamboat travellers.

There is a little white chapel on the brow of the hill, and the houses just around it are set with some show of regularity. We observe an attempt at a square also, but it is a side-hill affair, and all grown over with weeds. After this weak little effort toward civilization, the houses relapse into barbarism, and go straying away in picturesque confusion, hiding under the orange-groves and great, bushy mango-trees as if they shunned observation. Our own quarters—the best the place affords—are in an *adobe* house near the chapel; in other words, if you please, a mud house, but with wooden doors and window-shutters, and a good palm-thatch roof; no floor except the native earth, but that is dry and hard, and with clean mats to spread under our hammocks we shall do very well. Our baggage is lying at the canoe-landing, two miles away; half the women and girls in the village go trooping after it, willing enough to do a favor for the *Americanos*, and earn a few honest coppers in the doing; by sunset they are back again, bringing our valises and provision-cans on their heads; then, with everything under shelter, we eat our dinner of salt beef and mandioca-meal with the seasoning of a hearty appetite.

At long intervals Ereré has been visited by European and American travellers. Professor Agassiz spent a day here; Wallace and Hartt have made the name a classic one in the literature of science. But that a lady—and an American lady at that—should bravely tramp over the weary miles of sandy campo from Monte Alegre, is an unheard-of thing. Even the incurious Indians are aroused, and the whole population of the village comes crowding around our doors and windows. The older girls and women enter unasked, not from any lack of politeness, but because here every door is open to any one that cares to enter, and the good people

only wish to give a friendly greeting to the *branca*. Little naked boys and girls hide themselves behind their mothers' skirts, or peep in at the windows to catch a glimpse of this wonderful curiosity. At length, finding their attentions to the lady more pressing than pleasant, I order the crowd out. They go away quietly and politely, conversing with each other in subdued tones, and we retire to our hammocks and mosquito-nets. The night-wind blows in freshly through the open doors and windows, but, save a hungry dog, no intruder disturbs our rest. Among all this honest people, you will hardly find one who would so far forget the rules of hospitality as to pilfer from a stranger.

On the Amazons people rise with the sun. A bath in the river, or in the nearest spring, sets the skin in an honest, healthy glow, and sharpens up the mind to appreciate the splendor of an unclouded morning. The Indians bathe, always once, and often twice, a day. Even the toddling little boys and girls spatter themselves with water from a calabash.

The spring at Ereré is down in a shady hollow—a cool, verdant retreat, with noble palms, and tall forest-trees, and broad-leaved vines; such a combination as one sees only in these favored spots. Within a circle of fifty yards around the spring there are no less than nine species of palms, including the noble *bacaba*\* and the graceful *urucury*,† princes in their princely tribe; and these mingled with bamboos, and giant arrow-leaved *aningas*,‡ and orchids on the branches. Bathing here is a romance: the air is full of wind-whisperings among the leaflets and soft perfumes from the palm blossoms; emerald-tinted humming-birds—“kiss-flowers,” the Brazilians say—balance themselves before the pendent

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\* *Ænocarpus bacaba*.

† *Attalea excelsa*.

‡ *Calladium*, sp.

blossoms ; and fairy brown butterflies, just visible, flit along the ground. Indian women, coming down the path with earthen water-jars balanced on their heads, wait quietly in the forest until the *brancos* have finished their bath. Then they pass us with a "*Bons dias, senhores,*" and stoop to fill their jars in the little inclosed space that is reserved



The Spring.

for drinking-water. Half-a-dozen naked brown boys and girls follow, each with a round calabash-jug. They hold out their open palms for a blessing, and kiss their fingers in acknowledgment of our patriarchal "*Deus te abençoe!*" As we walk away, they watch us with quick, curious eyes, but say never a word.

And now we shall learn how it is possible

for men and women to live almost separated from the civilized world ; how a single family can provide themselves, not only with food, but with house, furniture, utensils—everything, in fact, but clothing and a few coarse articles of iron and steel.

Wherever we go, we will meet with nothing but kindness and unostentatious politeness. For instance, walking across

the weedy plot in front of our windows, we can call on old João Baptista, the best hunter and the best fisherman in the village. João rises to meet us, offering his hand (everybody shakes hands here, even more than in the States), and inviting us to a seat on the rough wooden bench by the door. He is a little, wiry, wrinkled fellow, his face rather pleasant, though badly pitted with small-pox; the high cheek-bones and broad, but not flattened, nose, are typical of the race; the mouth is a good one; the lips not too thick; the eyes bright and pleasant; the hair coarse, straight, and black as a raven's wing, albeit the man has passed his threescore years. Perhaps the Amazonian Indians may be best described by comparing them to Chinese. Indeed, the resemblance is so strong that the stray Chinamen who are sometimes seen in the river towns are commonly taken for Indians. The Amazonian race is characterized by a richer color—not the sallow hue of the Chinese Tartars, nor yet the coppery tint of the North American type, but a clear olive-brown, a kind of intensified *brunct*. João Baptista is dressed in coarse canvas trousers and short jacket or shirt; the cloth is stained dull-red with *muruchy*.\* It is soiled, for this is his work-day dress; but you may be sure that it covers a clean body. The old man is busily shaping a paddle, using his clumsy knife very cleverly on the hard *itauba* wood. He converses quietly, answering our questions, and asking a few in return; but he is not talkative.

The women of the house remain at a distance, unless they are spoken to; the code of social life here does not permit them to intrude their presence on male visitors. If the lady of the party is with us, they sit by her side, curiously exam-

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\* A tincture from the bark of a forest tree (*Byrsonima*, sp. ?)

ining her clothing, and asking simple questions about her country—the far-away, wonderful land, which, like Rome and paradise and heaven, exists to them only in name. The little ones, after the universal child-greeting of extending their palms for a blessing, stand watching us silently.

Examine the structure of the house. Roughly hewn logs of *itauba* and *páo d'arco* for the uprights; set in the ground, they will last for fifty years. Beams and rafters are of other hardly less durable timbers; the joints are secured with pegs or with strips of bark. Roof and sides are covered with excellent palm-leaf thatch, tied on in regular layers, like shingles. As for floor, there is Mother Earth, with a few mats laid down under the hammocks. There are no windows, and the door-ways are closed with palm-leaf mats. So you see that the whole house is formed of materials which every Indian can gather in the forest, with no other tools than his heavy wood-knife and clumsy, straight-handled ax. Some houses have the sides built up with lumps of clay gathered from the lowland creeks; walls of this material, supported by a framework of poles and sticks, are durable, but very unsightly. In the larger places they cover the *adobe* with plaster, and whitewash the outside very neatly.

The dwelling does not boast of much furniture. Besides the reed mats and cotton hammocks, there are only two or three benches (the boards of which have been hewn out of solid logs), and some green wooden trunks, with preposterous keys. These latter contain the *festa* dresses; the coarser, work-day garments hang on lines behind the hammocks. The trunks are rather articles of luxury than of necessity; in other houses we will see great *balaio* baskets taking their place; but every well-to-do Indian considers it incumbent on him to have a trunk, if he can get it for money

or credit. The last items of furniture are two low stools, which attract our attention by their singularity. One is made of the dry, hard skin of an alligator's breast, curved inward so that the scaled surface forms the seat and the incurled edges the feet; the other is the shell of a large terrapin, common in the neighboring woods. Under the roof there is a *geral*, or staging of poles, for mandioca-baskets, dried fish, and various pots and kettles. The most of these, however, are in the little shed-like kitchen back of the house. Every Indian dwelling, no matter how poor, has its kitchen separated from the main structure. The primitive fireplace is formed of three large stones; for bellows, there is a little mat-fan, or, very likely, the puffing lungs of the brown cook. Among the articles of *cuisine*, we may observe an iron kettle, or a tin coffee-pot; but these are by no means necessities; most of the older women can manufacture their own cooking-ware of coarse clay.

João's wife is willing enough to show us how the earthen kettles and jugs are made; indeed, she was preparing for her potter's work when we came in; the dried balls of clay have been soaked in water overnight, and are now ready to be kneaded. A quantity of ash from the bark of the *caraipé* tree\* is beaten in a huge wooden mortar, and added to the clay in an earthen pan. The woman carefully kneads the two ingredients together, picking out any small lumps and sticks that she finds, until she has a mass of good, stiff clay, dark in color, and very cohesive. Now she sits down on a mat, with material and tools before her. These latter are: 1, spoon-shaped pieces of calabash; 2, the sharp operculum of a large river-snail (*Ampullaria*); 3, a corn-cob; 4, a round

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\* Leguminosæ?

pebble ; 5, the long canine tooth of a jaguar ; 6, several red fungi, leathery species, full of little pores on the under side, which serves like sand-paper for smoothing. Besides these, there is a calabash of water, and a square of board, her primitive potter's wheel. A lump of clay is carefully kneaded with the hands and pressed out flat on the board, the edges being rounded off with the fingers and the shell scraper. By turning the board before her she obtains nearly a true circle of clay ; this is the bottom of the pot. Next, she forms long ropes of clay by rolling it on a board, very much as an apothecary rolls his cake for pills. The ropes are laid one over another, from the edge of the circle already formed, so as to build up the sides ; each layer must be carefully pressed with the fingers upon the one below it, and at intervals the sides are shaped with the calabash spoons, scraped with the shells, and smoothed with the corn-cob rasp and the fungus sand-paper, previously wetted. When the lower part of the pot is made, it must be set in the sun to harden, so that it will support the upper layers. Finally, the edge is turned over and finished outside with a thin roll, marked with the jaguar's tooth, as a New England housewife marks the edge of her pie-crust with a key. If we come again to-morrow, we can see how the baking is done over a hot fire of *jutahy* bark ;\* the pot is then polished with the pebble, and varnished, while still hot, with *jutahy-scca* † resin. ‡

There are calabashes, and turtle-shell pans, and gourd bottles, and wooden spoons ; baskets, small and large ; clay

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\* *Hymenœa mirabilis*, or some allied species.

† Corruption of *jutahy-icica*, Tupi, gum of the jutahy tree.

‡ The method of making pottery on the Amazons was first described fully by Prof. C. F. Hartt, in a pamphlet published in Rio de Janeiro, entitled: "Notes on the Manufacture of Pottery among Savage Races." A whole volume is condensed in this little work.



lamps for burning fish-oil, and so forth. João's wife has a few coarse plates and bowls, with knives, forks, and spoons, which she has purchased in Monte Alegre; very often the plates are replaced by native earthenware, and the bowls by



Indian Woman making Pottery.

calabashes, and it is no unusual experience for a traveller to be reduced to the Indian eating-implements—the fingers.

The standard article of food among all the poorer classes of tropical America is the *manioc* or *mandioca* plant; wheaten bread is not more necessary to an American, or potatoes to an Irish peasant, or sago to a Malayan. Every Indian has his little plantation, and the women are occupied much of the time in preparing *farinha*.\* At Ereré, the ground is too stony for cultivation; the poor folk plant their *roças* two or three miles away, in the woods, and to visit them we find it better to start early in the morning, while the air is yet cool, and the dew silvers every leaf. The trail leads through a low

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\* This must not be confounded with our farina, which, I believe, is a preparation from corn.

forest, almost entirely composed of palms; there is a thick undergrowth of the stemless *curuá*,\* from which the Indians obtain their roofing-thatch; taller *urucurys*† arch over the pathway; and occasionally, in wet places, there is a slender *assai*,‡ or a giant, fan-leaved *miriti*,§ or a pretty little *marajá-i*,|| with the stem no bigger than one's finger. There are vistas of indescribable beauty under the roof of swaying, nodding, trembling leaflets, where the sunlight is shivered into a thousand fragments, and each fragment is in constant, restless motion; where the pretty brown birds play hide-and-seek in the foliage, and brilliant gnats and dragon-flies chase the flitting patches of light. But by and by we leave the forest and come out to a mandioca-field.

Indian farming is of the rudest character. The plantation is simply an irregular clearing in the woods, with half-burned logs scattered all over the surface, so that it is difficult for us to make our way across; more than one of the party comes to grief over a hidden vine or branch. The ground has not been turned at all; as for plows, the Amazonian farmers never heard of them until they were introduced by Americans a few years ago. The mandioca-cuttings are simply placed, several together, in holes dug in the unprepared ground, and they get hardly any care. As a matter of course, the top-crust, baking in the sun and drained by the strong-growing plants, is soon exhausted; every four or five years the old clearings are abandoned, and new ones are made, involving fresh destruction of the forest, and great outlay of labor.

The mandioca that we see now is full grown; a half-

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\* An *Attalea*, allied to *A. spectabilis*.

† *Attalea excelsa*.

‡ *Euterpe edulis*.

§ *Mauritia flexuosa*.

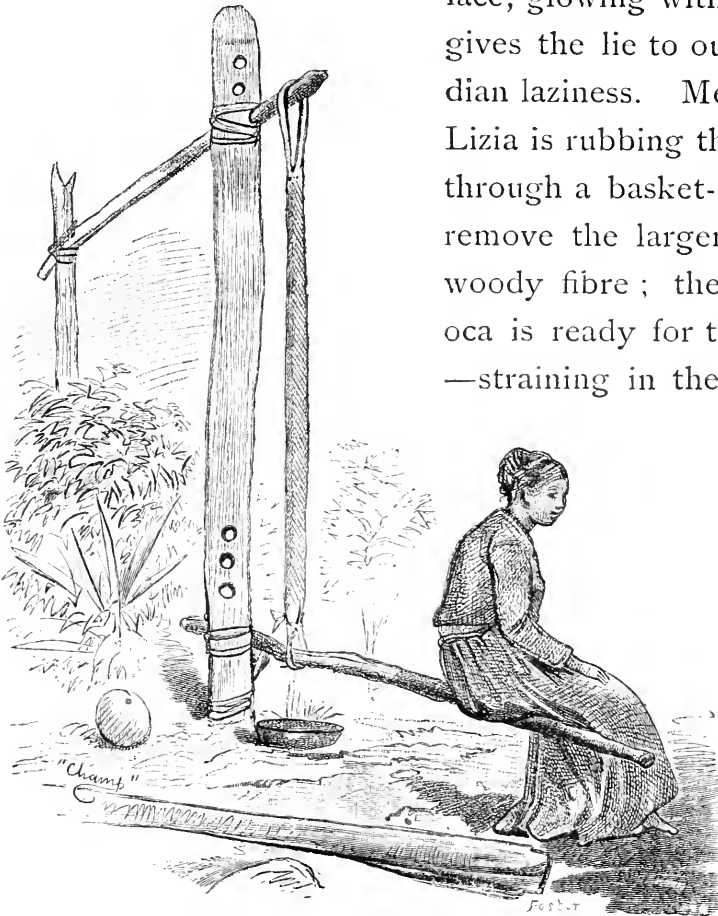
|| *Bactris*, sp.

woody, straggling shrub, five or six feet high, with knotted branches and thinly-set, bluish-green, palmate leaves,—a singular rather than a handsome foliage ; yet the plantation is not without a beauty of its own, heightened, perhaps, by the smoky-bluish tint, and the chaotic confusion of plants, logs, and intruding bushes.

The roots from which farinha is extracted are like a dahlia-root in shape, but much larger. When first taken from the ground they are full of a poisonous juice, and, of course, unfit for food. The process of manufacture, then, must secure two ends : first, the extraction of this juice, and, second, the separation of the nutritive principles in a form that can be preserved.

Down in a hollow of the field there are some pools of stagnant water ; the unsavory odor which proceeds from one of these is caused by a mass of fermenting mandioca-roots, which have lain here probably two days. This part of the process is not a pleasant one, and the girl who comes down to fill her knapsack-basket from the reeking mass in the pool, excites a great deal of groundless commiseration ; she only laughs to see our wry faces, and walks up the pathway with her sixty pounds of fermented roots, as blithely as she would with a basket of fragrant oranges. We follow, at a distance, to the little open shed where farinha is prepared. Half a dozen women and boys are cleaning the mandioca as it is brought in ; the tough outer skin is easily separated from the softened inner mass, and the roots are piled in a great wooden trough, the half of a hollowed *itauba* log ; here they are grated on a board covered with sheet copper full of nail-holes. Francisca in her *feita* dress may be pretty ; but as she stoops over the grater with a root in each hand, she affords a too-powerful reminder of that detestable northern

machine—the scrubbing-board. Her bare arms and black dress are spattered with the whey-like juice; her rebellious hair is just falling away from the confining comb; her brown



Straining the Mandioca.

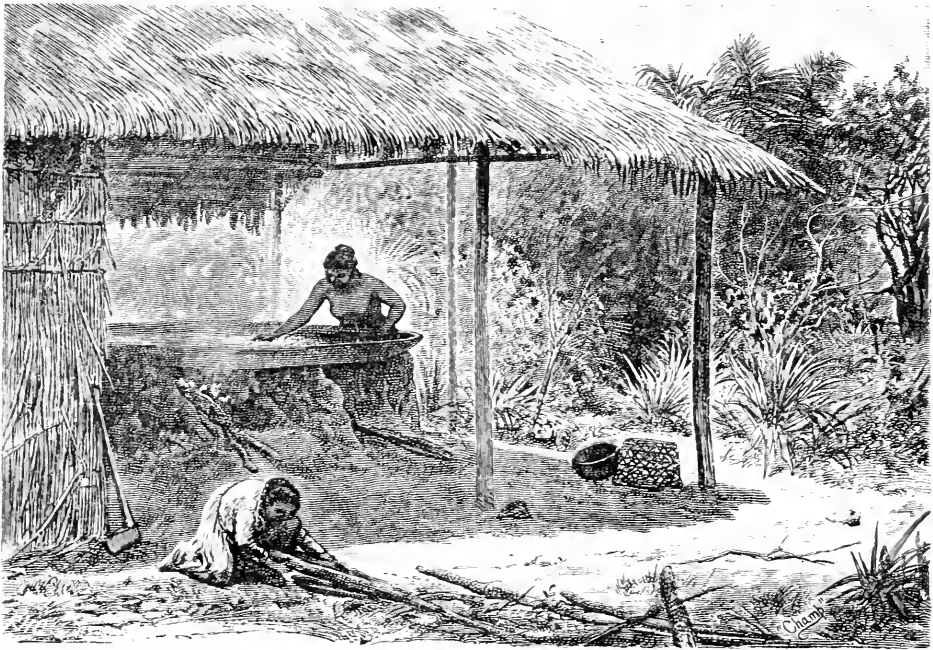
face, glowing with perspiration, gives the lie to our ideas of Indian laziness. Meanwhile, Miss Lizia is rubbing the grated mass through a basket-work sieve, to remove the larger fragments of woody fibre; then the mandioca is ready for the next stage—straining in the *tipiti*. This

is a long, narrow bag, or rather pipe, woven from strips of palm-fibre; the strips run diagonally around the bag, so that the capacity

can be increased by simply forcing the ends together, causing the elastic sides to bulge out; in this shortened condition it is filled. Now, if it is hung up and drawn out forcibly, the mass within will be compressed and the juice will run out through the interstices; in the same manner a farmer's wife strains whey from a cloth bag. To increase the pressure, a lever is passed through a loop in the lower end of the *tipiti*; a heavy stone may be attached to the lever, but our brown

operator finds it more convenient to sit on the end of the pole ; the juice streams out and flows into a pan below.\*

A small portion of the poison still remains, but it is very volatile, and will be removed by the roasting process. The *furno* on which this is done is a thick earthen pan, six feet in diameter, supported by a circle of *abobe* wall, with an opening on one side, so as to form a fire-place. Francisca has



Roasting Farinha.

already kindled a fire of brushwood under the furno. The lumpy mandioca from the *tipiti* is broken up on the pan, and roasted with constant stirring ; gradually the vile odor of the volatile juice disappears, leaving a fragrance like that of roasting corn ; as the farinha dries it is spooned out into pots and baskets. The warm grains taste like the parched

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\* The starch which settles from this juice is the tapioca of commerce. The juice, boiled or fermented in the sun to extract the poison, and seasoned with red peppers, forms an excellent sauce for fish, the so-called *tucupi*.

sweet corn that we used to prepare in the country. But the farinha will soon lose this brisk flavor, and become insipid ; one's teeth, too, rebel against the hard grains. It does not appear, however, that the old farinha is positively unwholesome, and it is eaten by the poorer classes throughout Brazil ; often it is stored in baskets for a year.

There are many other preparations of mandioca ; as, for instance, *farinha seca*, obtained from the unfermented root, and the fine white *carimá*, farinha and tapioca together. And as, in other countries, corn, potatoes, sago, etc., have been made to yield alcoholic drinks, so these Indians make from the mandioca a beer-like liquor, which they often use in immense quantities. From this *terubá* a very strong and crazing rum (*cauin*\*) is sometimes obtained by distillation ; but, fortunately for the race, this is not often seen.

We wait in the shed only long enough to see the farinha packed away in baskets lined with broad, tough leaves. Within a few minutes the Indians weave these open *panciro* baskets, using, for material, strips of the tough coating which covers the leaf-stalks of *miriti* and *carandá* palms. Our farinha-makers will not let us leave without a present ; so each of us carries away a great stalk of sugar-cane (the Indians plant a little in their *roças*), and half a dozen *bijú* cakes—another mandioca preparation.†

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\* As Mr. Burton suggests, this word may be derived from *cajú*, or *cayú*, the name of a fruit, *Anacardium occidentale* (corrupted, in English, to cashew). From this fruit the Indians obtain a kind of wine, *cayú-yg*, cashew-water. The name may subsequently have been applied to all fermented drinks, and changed, in course of time, to its present form.

† The process of preparing mandioca, here described, does not differ essentially from the aboriginal method, which was in use from Paraguay to Florida. It is curious to note that the Carib names for mandioca and its products, and for the utensils used in preparing it, hardly differ from the Tupí and Guarany.

These Ereré women are examples of industry. From our window we can hear, in the neighboring houses, a monotonous rat-tat-tat, as of some one beating on a muffled drum; sometimes it comes from three or four houses at once; we hear it at all hours of the day. As we are welcome everywhere, we can follow the sound that comes through one of the low door-ways. Seated on a mat, pretty Maroca is occupied in beating a pile of cotton into long fleeces as light as thistle-blows. She looks up with a smile, but does not stop her work. The cotton is laid across a large cushion; the drumming noise that we heard was the tap of her *caraaná* beating-wands on this cushion. She handles the airy mass deftly with her wands, forming it, as it is beaten, into a many-folded pile by her side. When the pile is large enough, it must be passed again across the cushion, and so on until it has been beaten five times; then it is ready to be spun into cord.

The aboriginal, and commoner, method of cord-making is with a spindle; the fleecy cotton is first slightly twisted with the fingers, and then spun by rolling the spindle between the hands. But at Ereré a simple spinning-wheel has been introduced, a noisy little affair, the clatter of which may often be heard as the old women sit by their open doors making hammock-thread. Homespun clothing is no longer in vogue; even the Indians find it cheaper to purchase American and French cloths of the traders. However, Josepha will show us how the cotton is woven into coarse, serviceable hammocks. She has dyed some of the threads pale blue and yellow; these are the woof, which, with the warp of white, will form a simple check pattern. She is seated now, tailor-fashion, before the simple loom—or rather frame, for it is nothing more; every thread of the woof must be

passed through the warp by hand—a task which might appear formidable, even to our fancy-work maniacs at home. But Josepha sits all day with her pretty, modest eyes fixed on her work, and her hands—brown, but not unshapely—



Hammock-weaving.

cleverly tucking the thread-bobbins through the warp. At the end of a month she will have a hammock as serviceable as any she could buy in the shops, and but for the miserable short-staple cotton cultivated here, the product would be much more valuable.

I tell you I have a real respect for Josepha, a good wife and a good mother, keeping faithfully to her round of womanly duty as she understands it. It is true that she knows nothing of theology, but she is devout in her way, and holds the saints in reverence. It is true that her single iron kettle is scrubbed only on the inside, and there is a sit-



ting hen in the corner of her parlor bedroom, and the tame pig is allowed to run about the house at its own sweet will ; but the bright-looking children are as clean as water will make them, and their clothes are well patched ; the earthen floor is carefully swept, and the space around the house is kept free from weeds and bushes. Probably she is not legally bound to her partner, for marriage among the younger Indians is not common, partly because it is considered unnecessary ; principally, I think, owing to the expense, ten or fifteen dollars being a heavy burden to these improvident people. But Josepha's man is a steady, hard-working fellow, and very fond of her and the children, so it is not likely that they will ever be separated. The wonder is that these half-civilized people have come so near the high ideal of marriage. Their code of morality is certainly superior to that which holds among other classes on the Amazons. It is true that the younger women are inclined to be flighty, and you may see them with children which " have no father," so they say ; but later in life they grow steady, and are very faithful to their legal or *de facto* husbands.

Child-life here is an exceedingly curious study ; the little quiet creatures are so different from our romping American boys and girls. They get few caresses and give none ; mother-love is mechanical ; there is nothing of that overflow of tenderness, that constant watchful care, that sheds such a halo around our homes. The babies vegetate in their steady brown fashion, seldom crying or laughing, but lying all day in their hammock-cradles and watching everything around them with keen eyes. As soon as the little boys and girls can toddle about they are left pretty much to their own resources, tumbling up the back stairs of life on a diet of mandioca-meal and fish. The parents seldom punish their

children, for they are very docile; when they do, the little ones pucker up their mouths and look sullen, but do not cry. Pleasure is expressed by a smile—among the little girls very often by a broad grin, with abundant show of teeth; but an articulate laugh is a rarity.

It is interesting to watch how the mental traits of the race appear even in the young babies. If a plaything is given them, they examine it gravely for a little while, and then let it drop. Observe how different this is from a white baby's actions. A bright little six-months-old at home has four distinct methods of investigation: first, by looking; second, by touching; then by putting the object in its mouth; and finally, by banging it against the floor. The brown *menino* just looks; does not investigate at all. As the children grow older, the same trait is apparent in almost every case. An Indian is content to see or hear a thing, without troubling himself about the whys and wherefores; even such incomprehensible pursuits as fossil-collecting, or butterfly-catching, or sketching, provoke hardly any curiosity. The people look on quietly, sometimes asking a question or two, but soon dismissing the subject from their minds as something they are incapable of understanding. With all the crowding to see the lady of our party, hardly a person asked why she came. So, too, the babies are unambitious; they do not cry after pretty colors, or stretch out their hands to a candle. And the men have no apparent desire to better their lot. They go on just as their fathers did; submit to the impositions of the whites, a little sullenly, but without a thought of rebellion, unless there is a white or a half-breed to lead them. The children do not care much for playthings; we rarely see one with a rag doll; the little boys delight in bows and arrows, but they take them as a part

of their training. Sometimes the children have dances, in imitation of the *fiesta* sports; and we hear them humming the waltzes and quadrilles which their quick ears have caught from the musicians. As an Indian will paddle steadily all day, while his wife at home hardly ceases her monotonous



Indian Woman beating Cotton.

cotton-beating, so the little ones have an inexhaustible gift of patience. Where a white child would fret and cry, the brown one sits all day, perfectly still, but watching everything around him. To see a little Indian boy in a canoe, you would say that nothing of him was alive but his eyes.

Most of the boys get a little schooling, after the prevalent fashion here: *i. e.*, about an equal amount of dry text-book\* and smarting ferule. However, they are bright

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\* No wonder that the Amazonian boys have so poor an idea of geography; in all their school-books there is not a single map.

students, and soon learn to read and write the easy Portuguese language. Sometimes the children are taken into white families, where they do very well at first; but as they grow older they become impatient of restraint, and dream moodily of their native wilds. So it generally happens that the boys embark in a trading or fishing canoe, and the girls elope with some admirer to parts unknown. The Brazilians complain loudly of this ingratitude. "After having had all the care and trouble of bringing up the children," they say, "we are deserted just when their services become valuable." It must be confessed that there is much reason for this complaint; but I think that the unfaithfulness of their wards is to be attributed less to any positive badness of character, than to the childishness which remembers only the present, and forgets a past kindness. This childishness is shown, also, in the ease with which the Indians bear the loss of friends and relatives. I remember a striking instance. I had been living for some time in an Indian house; it was of the better class, and occupied by a steady-going young man and his family. One of the women had a sickly baby, not more than three months old. The tiny thing required much care, and the mother paid more attention to it than a healthier child would have received. She never left it long; if at work in the field she would come to the house every hour or two, to take it from its girl-cousin, though the latter, for an eight-year-old, was an excellent nurse. One morning the baby sickened, and lay moaning weakly for a few hours, until it died. There were no religious rites, except that, as the custom is, the child had been baptized just before its death. The mother laid the little body on a mat, and folded the thin fingers together, with a white flower or two; it was all she could do, for they were too poor to afford a funeral.

But she sat looking at it, with the tears—she vainly tried to conceal them—rolling down her brown cheeks and falling on the little upturned face. Presently she turned away, and the men took the body out and buried it in the deep forest. That night there was an Indian ball near by, and I saw this mother, so lately bereaved, taking part, all smiles, in the merriment. I confess, I was shocked at first; but then her grief in the morning was unfeigned, and there can be no doubt that she would have stayed away from the dance for a living child, though she did not for the dead one. It was simply the half-savage, childish nature—to grieve only at the moment of a loss, and then forget all about it.

The Indians may be unfaithful to their white masters, but in their own circles they always retain a reverential love for their parents, and, as they grow older, take them under their care. At Ereré we often notice the beautiful respect which age inspires. Many a touching picture one sees: a gray-haired patriarch, sitting before his door in the crimson sunset, and gravely giving his hand to be kissed by sons and daughters who come to honor him; village children stretching out their palms for blessings from a passing old man; young Indians bringing offerings of fish and fruit to decrepit old women, who have been left destitute, and are obliged to subsist on the willing charity of their neighbors.

On moonlit evenings the old people sit before their doors until near midnight, while the younger ones stroll around from house to house, gossiping with their neighbors, and carrying on sly flirtations under the orange-trees. Our own house is quite a centre of attraction; the women come, three or four together, to pay their respects to the *branca* and bring her presents of fruit, sugar-cane, a little fresh meat,

and so on ; they are well satisfied when they get a few soda-crackers in exchange.

One evening, C. and I are seated before the door, watching a partial eclipse of the moon which is taking place ; suddenly a drum-like noise comes from some distant house ; immediately a gun is fired, and from another place a rocket goes whizzing over the trees. Here is a relic of the aboriginal superstitions. The old Tupís supposed that the life of the moon was like that of a man ; beginning very thin and small, he eats and grows until he is full and round ; then comes his period of decrepitude, he is weak and thin :

“ His youthful hose, well saved, a world too wide  
For his shrunk shank,”

until he dies, and gives place to another moon. But our friend, João Baptista, says the moon has not had enough to eat to-day ; some demon has stolen his farinha, and he goes half-starved. “ It was the belief of the ancients,” says João ; “ people nowadays know better.” But nevertheless they are firing guns and beating on wooden mortars, to frighten away the evil spirit. It may be for some other purpose ; they are not sure ; they only know that their fathers succeeded in getting rid of the eclipse by making a noise ; there is the plain fact that the moon became full again, soon after the beating began, and it would be folly to neglect an observance so efficacious.\*

I think that the Indians keep up their religious observances very much in the same spirit. They have no definite theology ; their religion is rather a vague and undefined awe

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\* This custom of making a noise to frighten away the eclipse is found among many tribes of the Tupí-Guarany stock. I am informed that it is also met with in Turkey.

of a higher power, which they all acknowledge, but do not seek to understand. It is true that they are nominally members of the Catholic Church; but they show very little interest in the ceremonies; their own Christianity is confined to a few simple observances, and they do not even clearly understand the import of these.

Each year there is a grand festival in honor of the patron saint. For two or three weeks before, the little chapel is lighted up every evening, and the people gather to a kind of singing prayer-meeting; the women kneeling devoutly on the earthen floor, while three men, before the little shrine, lead them in their simple chants. All the villagers know these hymns by heart; they have very sweet and clear, though untrained voices; certainly we have heard worse singing in a country church at home. And what if the women are dressed in calico, and the men standing around the door are coatless and barefooted; the little crowd has the true spirit of devotion, though there is not one, perhaps, who could tell you whether they are worshipping the wooden saint in the shrine or a spiritual saint in the sky. The men kneel with the women to repeat the Lord's Prayer; then all go up to kiss the saint's girdle and leave their contributions—a few coppers to purchase sugar and rum for the *festa*.\* After that they adjourn to a neighboring house, and spend an hour or two in dancing.

The grand festival begins on Saturday evening. During the day, parties have been coming in from all directions, bringing their *roupa de ver a Deus*—"clothes to see God in"—on their heads. Every house is crowded with guests, and many swing their hammocks to the trees; the old women

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\* *Que voulez-vous?* Our white heathen in the United States give twenty-five cents for a dish of strawberries, and call it charity.

busy themselves in preparing sweetmeats and mandioca-beer; the men build an arbor of boughs before the chapel. Everybody attends the final prayer-meeting, and devoutly salutes the saint; then the dancing begins, in several houses at once, and is continued, with very little intermission, until Tuesday or Wednesday, as the refreshments last. Many of the young people get only five or six hours of sleep during this time. The dancers are orderly, and, for the most part, sober; the old people sit around and watch them, and grow talkative, and enjoy themselves quietly; and white clerks from town move about with a pleasing sense of their own



The Sairê.

glory. On Sunday morning there is an interlude, during which the grand breakfast is served. An ox has been killed for the occasion, and the guests eat as much as they please, with their fingers for forks. Ceremonious toasts are pro-



posed in bad Portuguese and drunk in bad wine ; everybody says “ *Viva !* ” in acknowledgment of everybody’s sentiments, and there is a solemn aping of all that is ridiculous in the grand dinners of the *brancos*. With this, the Indians feel that they have done their duty, and return to their sports with fresh unction.

They dance rustic waltzes and quadrilles, not ungracefully, to the music of a violin and a little wire-stringed guitar. Then there is the favorite *lundú*, a kind of slow fandango, involving much snapping of fingers and shuffling of feet. The *saracura*\* dance is led off by a special musician, a merry old fellow, who marches about the room playing a tiny reed flute with the right hand and beating a drum with the left. One after another the couples fall in behind him, tripping along with their arms about each other very lovingly, and keeping time to his music with a little jingling song, which, in English, would be something like this :

“ I swung in my drowsy hammock  
 And wooed the forest boughs ;  
 But they answered low : ‘ There’s pain and woe  
 In the lover’s foolish vows.’ ”

Little fish in the deep, dark pool,  
 Fickle sand of the sea,  
 How can I ever love you alone,  
 Since you will not alone love me ?

What if I drift away, away,  
 Alone on the ocean swell ;  
 What if I die with no one nigh  
 Of the friends who love me well ?

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\* *Saracura*, name of a bird, *Gallinula Cayennensis*.

Yet I have the sun for my lover true,  
 The moon for my lady bright,  
 The sun to walk with alone all day,  
 The moon in the silent night."

Sometimes the dance is varied with figures, forming a circle, advancing to the centre, retreating to the ring again, and so on. It is simple, but very pretty.

On Sunday evening, the old women take their turn with the *sairé*, a ceremony invented or adapted by the early Jesuit missionaries. The women pass from house to house, two of them in front carrying an arched frame, surmounted by a cross, and prettily trimmed. A ribbon, attached to the cross, is held by a third woman, who always walks behind. Invited in, the performers seat themselves on a mat, and are served with rum and sweetmeats, in respectful silence. Presently they rise and begin a monotonous chant, keeping time to the slow beating of the drum. Now they take three steps forward and three back, the two in front waving the frame before their faces, and the one behind following their movements and holding the ribbon above her head. The ceremony goes on in this way for half an hour, with pauses at intervals. The old women hold themselves with a sedateness befitting their important office, gathering a touch of weirdness from the flaring oil-lamps and the dark faces around. The song—a hymn in praise of the Virgin—is in the Indian language (*lingua geral*), which is hardly understood now, except by the old people.\*

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\* The *Sairé* song varies in different localities. Two of the verses, commonly heard, may be translated as follows:

"1. In a stone font the God-child was baptized.

" *Chorus*.—Jesus and Saint Mary.

"2. Saint Mary is a beautiful woman, and her Son is as beautiful as she; in the high heavens he is sitting on a cross, to keep guard over our souls. *Chorus*, etc.

These women have their heads crammed full of the aboriginal superstitions. They will tell hobgoblin stories by the hour, sitting in the fire-light and hugging their knees with shrivelled arms until you think of witches, and half believe their myths. Sometimes, in our wanderings about the Serra and the plains, our guide points out the haunts of these spirits. We climb to the *Tititira* cave, and frighten out the bats, and imagine big snakes in the crevices around ; but the *tititira* does not come to scare us with horrid noises and strike us with invisible hands. In the forest we hear of the *curupira*, a bald-headed dwarf, with feet turned backward, so that those who see his tracks and try to avoid him will only run to their own destruction ; he entices hunters away by imitating the call of a *mutum* or a partridge ; then, when they have lost themselves in the thick woods, he kills them, and tears out their hearts and livers, and makes an unctuous meal.

But time passes, and we must leave Ereré sleeping in the mellow sunshine. Farewell, honest, simple-hearted people ! Farewell, nodding palms, and shady orange-groves, and woodland paths ! The sunshine lies yet over the distant houses and tiny white chapel, but we carry away a little of it in our hearts—happy memories of this quiet spot.

## CHAPTER XIII.

### CEARÁ AND THE DROUGHT.\*

**I**N eastern and central Brazil, south of the Amazonian forest, there is an extensive region known as the *Sertão*,† or wilderness. It forms a broad belt, extending from the Parnahyba river to the São Francisco. The northern portion lies close to the coast, but from Cape St. Roque southward there is a band of forest, separating the interior plain from the ocean. Beyond the Rio São Francisco, the *Sertão* is interrupted by the Brazilian coast-range, but behind these mountains it is prolonged southward into the province of Minas Geraes. To the west, its limits are far within the province of Matto Grosso.

Without attempting to describe this whole region, I may confine my story to the single province of Ceará; first, because I know more about it; second, because here the phy-

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\* The present chapter is a mere *résumé* of the story of the drought. This is not the time to write its full history, for the record is not yet closed. Late advices from Ceará leave no doubt that 1879 is also a dry year. What the end will be, no one can say. A letter from the author, published in the New York Herald of Feb. 14th, 1879, gives many particulars which are not noted here.

† The word *Sertão* is often applied to all the wilder regions of Brazil, but it is more generally used, in the coast provinces, to designate the dry interior region. In Ceará it has a more limited meaning, being applied to the low, sandy plains, in contradistinction to the table-lands, or *serras*.

sical characters of the sertão are most strongly marked ; third, because the great drought of 1877-'78, though it was felt all over the sertão, seemed to have its black nucleus in this portion of it.

Ceará is not at all like the Amazons region to which we have been accustomed. Like the rest of the sertão, it is a high, rolling plain, with abrupt elevations here and there, isolated hills and mountains or connected chains. These mountains, instead of being broken up into peaks, are nearly flat above ; they are, in fact, outlying fragments of the great central table-land. In height, they vary from two thousand to five thousand feet.

The only high forest of Ceará is found on the mountain-sides, and even there, nothing is found to compare with the luxuriance of the Amazonian woods. The flat hill-tops, and the plains below, show either a thin forest growth, like a northern wood, or open country, pastures and sandy tracts, with groves about the river-courses.

The grand peculiarity of the sertão—that which distinguishes it from all other parts of Brazil—is the marked division of the seasons. From June to December the rains cease almost entirely ; the streams and rivers disappear, except along the mountain-sides ; on the plains, water can only be obtained by digging holes along the dry courses. The trees cast their leaves as a northern wood does in winter ; birds migrate to the hills ; insects and birds æstivate as northern species hibernate ; grass dries up on the plains, and nature goes into her long summer sleep, to waken only with the early rains. The first signs of change come in September and October, with slight showers, the so-called *chuvas de cajú*.\*

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\* Cashew-rains, because the cashew-tree (*Anacardium*) flowers at this time.

Then, in December and January, there are other and heavier rains ; so heavy, indeed, that they sometimes cause serious losses, by flooding the plains and killing crops and cattle. But with these storms, the plant-world starts into new life. As, on a warm April day at home, you can almost see the leaves grow, so here the naked branches are covered as by a miracle ; grass springs up over what was barren sand ; animal life appears once more, and after a week or two, the wilderness has become a garden.

We do not yet clearly understand the laws which govern changes of seasons under the tropics. At Ceará the dry months, from July to January, are marked by the prevalence of regular trade-winds from the northeast, east, and southeast. The wet season, on the contrary, is distinguished by calms and variable winds. No doubt the two seasons are intensified by the nature of the soil, a porous sand almost everywhere. In the wet season this is constantly moist, but never flooded ; the rains are quickly distributed to the thirsty roots, and constant evaporation keeps the air cool and moist. But in the dry season, moisture sinks away from the surface, and only the dry soil is left ; dew is swallowed up and lost at once, and light showers, if they appear, do not effect the vegetation. The plains, which were smiling pastures and groves, become dry, cheerless deserts, scorched with heat all day, dry, though cool, at night.

The character and customs of a people depend largely on the region that they inhabit. Thus, on the Amazons, the villages are along the river-shore, or within a few miles of it ; the interior is untrodden wilderness. The poor folk there are fishers and hunters, as well as farmers in a small way ; communication is entirely by water, and a petty commerce is carried on by means of trading canoes ; seasons are regu-

lated by the rise and fall of the current ; it is a river-world, a population dependent on this one mighty stream, and influenced by it in all their customs.

In Ceará the forest was never thick, and roads were cut and kept open without difficulty ; they were, in fact, a necessity, for there is not a single navigable river in the province. The early settlers, attracted by the rich grass-lands of the interior, obtained grants of it from the Portuguese Government, and established cattle-farms ; they imported slaves or enlisted the services of the Indians ; lands and cattle were passed down from father to son, so that, in 1876, there were still estates that had existed intact from the colonial times.

The result was, a scattered population, pretty evenly distributed over the whole province ; numerous villages, which were so many commercial centres, each with a few thriving merchants, a lawyer or two, a physician, and so on—just as you will find in country villages in the United States. The whole population was sharply divided into proprietors and non-proprietors. The first, including the landholders, merchants, and so forth, were whites, with less intermixture of other races than is commonly seen in Brazil. Probably no other province, except, perhaps, Pernambuco, could show a class so intelligent and industrious ; physically and morally they were far superior to the average Brazilian of Rio or São Paulo. Perhaps they had no greater fault than being hot-headed politicians, and not always willing to give up party prejudices to the true interests of the country.

But this class formed hardly a sixth part of the whole population, and even among them the number of educated families was surprisingly small. The great mass of non-proprietors formed a race by themselves ; the irregular mixture of Indian, negro, and white blood had resulted in a fixed

type, varying somewhat in color, but with certain unmistakable characters that bound all together. In some respects they resembled the Amazonian Indians. The physical characters were very similar, and, like the Indians, the sertanejo was childish, improvident, impatient of control; unlike him, he was very immoral, and filthy to the last degree.

The ordinary dress of the men was a pair of white drawers, with a shirt hung loosely outside of them, and a broad-brimmed, leather hat; a costume always cool, and not unpicturesque. The women wore only a skirt and chemise, with a cotton cloth thrown, hood-fashion, over their heads, to shield them from the sun. The boys and girls were content with a white shirt. As these garments were hardly changed or washed from one year's end to the other, the original color was soon lost. As for the bodies underneath them, I suppose that the only washings they received were from the winter showers, or the rivers that they crossed.

A certain number of the sertanejos were regularly employed as herdsmen; the rest were congregated about the villages or large estates, sometimes letting their services for a day or two, and planting little patches of mandioca and vegetables, or hunting on the mountains. They lived in palm-thatched huts, and, having no property of their own, of course paid no taxes to the state.

In Ceará nearly all the land was private property, and much of it, as I have said, was included in large estates. Hence there had resulted a kind of mild feudal system. The dependents of the old Portuguese proprietor had given rise to numerous families, many of whom still lived on the estate, and were permitted to cultivate small portions of it, rent free. In return for this, they were obliged to give their services for one or two days in the week, as the *patrão* de-



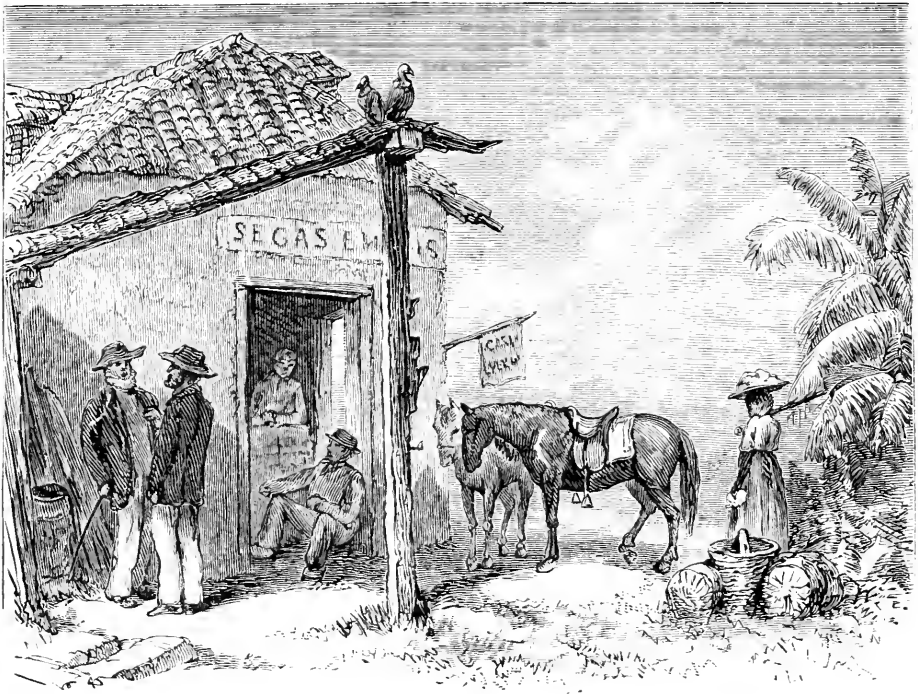
sired ; for such labor, they were regularly paid at the rate of thirty or forty cents per day. These people were known as *aggregados* ; the landlord exercised the office of a magistrate among them, and, as his rule was reasonably just, the poor people hardly ever rebelled against it. In fact, they were attached to his interests almost blindly ; in the last century, and even in the early part of this one, they sometimes served as armed retainers, in the petty political wars or private quarrels of the richer class. But with the advance of republican ideas, this feudal tenure lost much of its force.

As canoe-life is a part of Amazonian travel, so one's memories of Ceará will always be connected with long rides over the picturesque country-roads. The horses here were small, slender-limbed, gentle, and as easy-going as rocking-chairs ; the best of them were pacers, and it was no uncommon thing for a rider to make sixty miles or more a day, often on very rough ground, and this for weeks together.

Almost all the produce of the province was carried on horses. It is true that there were clumsy, wooden-wheeled ox-carts, but these were seldom seen ; throughout the country the traveller met long cavalcades of horses, each with a heavy pack slung over its back. Often these packs were bundles of hides folded square ; or bales of cotton, or sacks of sugar ; if the caravan were passing in from the coast, there were leather trunks and sacks, filled with provisions and clothes. Sometimes, in long journeys, leather water-bottles were carried, one on either side of the saddle. Most of the horses in these cavalcades were without halter or bridle ; a few only were mounted by boys or men, who perched themselves above the packs, with their feet dangling on either side of the horse's neck, or crossed over it. Women rode in

the same way, often with their children in baskets, slung, like the packs, one on either side of the horse. Two or three men, armed with guns and swords, kept guard over each caravan, and, to vary its character, a few mules were often mingled with the horses, and perhaps a sheep, with a small pack like the rest.

A principal commerce of the country was in hides and



Road-side Scene, Ceará.

jerked beef. Before the drought, many of the proprietors counted their cattle by tens of thousands, and kept some hundred herdsmen under their orders; men who were in the saddle half their lives, so that riding became an instinct to them. Some of their feats were astonishing. Clad in full leather suit—hat, coat, vest, breeches, and long boots,—they would ride after a wild bull, at full gallop through the tangled forest, regardless of thorns and smaller branches, dodging

tree-trunks, and passing through openings such as no sane man would venture at in cold blood.\*

Cattle-raising was almost confined to the warm plains. Along the cooler mountain-sides there were plantations of sugar, coffee and cotton, and all these articles were exported.

Ceará has no harbor, but a few ports are scattered along the coast. The largest of these is the capital, Fortaleza. In 1876 it contained about twenty-five thousand inhabitants. The streets were wide and clean, and the whole appearance of the city was very pleasing. Ships anchored in the open roadstead; freight was carried in lighters, and passengers and luggage on *jangadas*.† Like the interior of the province, the capital was, normally, very healthy; and being always cooled by the sea-breezes, the heat was never oppressive.

Pass the preceding statements in review. In 1876 the

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\* "When the oxen are to be collected for the market, the service is more dangerous, and frequently the rider is under the necessity of throwing the animal to the ground by his long pole. On the man's approach, the ox runs off into the nearest wood, and the man follows as closely as he can, that he may take advantage of the opening of the branches, which is made by the beast, as these shortly close again, resuming their former position. At times the ox passes under a low and thick branch of a tree; then the man likewise passes under the branch, and that he may do this, he leans to the right side, so completely as to enable him to lay hold of the girth of his saddle with his left hand, and, at the same time, his left heel catches the flap of the saddle; thus, with the pole in his right hand, almost trailing upon the ground, he follows without slacking his pace, and being clear of this obstacle, again resumes his seat. If he can overtake the ox, he runs his goad into its side, and if this is dexterously done he throws it. Then he dismounts and ties the animal's legs together, or places one foreleg over its horns, which secures it most effectually. Many blows are received by these men, but death is rarely occasioned."—Koster: Travels in Brazil. 1817. Vol. i., p. 235.

† The *jangada* is a small raft, with a raised staging at one end, and a great triangular sail. The passenger is carried through the surf safely, if he holds on tightly enough. If the surf is at all high the baggage gets wet; the passenger does, in any case.



herdsmen and proprietors had no income beyond the stock-farms ; merchants could only sell where the herds or plantations gave means of buying ; there were no manufactures ; the province was exclusively an agricultural community. And the earth, the mother of all, depended for its fertility on rain.

The wet season is the time of plenty for the sertão. With the first showers, the poor people have prepared their little plantations of mandioca and vegetables, and the richer proprietor has started his fields of sugar-cane or cotton ; the lean cattle fill out their sides and rejoice in abundant pastures and sparkling streams ; and in the village chapel, the peasants gather to give thanks for the blessing of rain.

Sometimes the early weeks of December pass without the customary showers ; then the peasants come, on St. Lucia's day, to pray for a good year. But the weeks pass on, and every morning brings only the same bright sky, or, if passing showers give some hopes of winter, succeeding days of rainless weather dash them to the ground. January, February, March : no rain, and the cattle are dying. Now, with tears and bitter cries, the people appeal to St. Joseph, that they may yet be blessed with a good year. April : the twice or thrice planted fields have dried up. May comes with a spiteful shower or two, useless now because too late ; and then the summer sets in, and all hope must be transferred to another year. But, before that year comes, men will die of hunger.

This is the drought, the terrible *secca* of the sertão. There are many on record. The earliest of which we have any definite account, was in 1711. About 1723 there was a very severe drought, in which whole tribes of Indians per-

ished, and the cattle were almost destroyed. In 1777-'78 there was another period of suffering. Still worse was the great secca of 1790, which lasted three or four years, and almost depopulated the province. "It was not unusual," wrote an eye-witness, "to find habitations where, by the side of putrefying bodies, lay wretches still alive, and covered with blood-sucking bats, which the victims had no strength to drive away."\*

Of the terrible drought of 1824-'25 the people of Ceará retain many traditions. The best description of it is that given by Dr. Thomaz Pompeu de Souza Brazil. I venture to translate it almost entire :

"The year 1824 was bad, and 1825 was very dry ; there were, however, a few rains about certain river-courses, which caused a little grass to spring up, but not enough to keep the cattle through the year. The effects of the physical calamity were aggravated, first by the concurrence of moral causes, and afterward by pestilence. From 1821 and 1822, the public mind had been agitated by the Portuguese revolution, and the establishment of Brazilian independence. In 1824 this was followed by a republican revolution, and the monarchical reaction extended through the year 1825. The year 1824 had bequeathed to its successor, not only drought, but penury and desolation, from civil war and assassinations ; 1825 was ushered in, and continued under the influence of this triple calamity : drought and famine, civil war, and the pestilence of small-pox. This accumulation of calamities was still further aggravated, by the extensive enlistment of the able-bodied men who were left in the province.

"The cattle estates were ruined ; what escaped the drought was carried off by robbers. Many farms were abandoned, and immense districts of the sertão were completely deserted. The mortality in the interior settlements, and even in Fortaleza, was horrible. In the larger villages, the victims of hunger were few, because food came from be-

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\* P. Joaquim José Pereira, in *Revista do Instituto Historico e Geographico*.

yond the province ; but the agglomeration of immigrants from the interior tended greatly to increase the death-rate. It is estimated that a third of the population died of famine, assassinations, pestilence or hunger, or were drafted into the army, or migrated to other provinces.

“The interior of the province was almost deserted. Herdsmen and farmers sought refuge in Fortaleza and Sobral, or the larger settlements, against the famine and robbers. A mixed band of these latter overran the sertão, and took possession of all they found, as in a time of open communism. The unfortunate people, fleeing from hunger and bandits, flocked to the larger villages. By the road-sides, in the fields, in the very streets and squares, unburied bodies were left of those who had fainted by the way.

“The pestilence of small-pox, which followed or accompanied the famine in the beginning of 1826, completed the destruction of the indigent population which had flocked to the capital.

“The lack of rains in 1825 was not so complete that no pasturage was left ; in some of the river-courses a little grass sprang up, and at least one-tenth of the cattle escaped.

“It does not appear that the General Government, during the year 1825, took the least interest in lessening the misfortunes of the people. Only at the end of the year 1826, or in 1827, when the evil had passed, a little farinha was sent to Ceará. The product of an extensive subscription, started in Pará by the virtuous D. Romualdo, Archbishop of Bahia, was delivered to a certain merchant of Fortaleza ; according to a report of the provincial president, this man retained the money, sending orders to his debtors in the interior, to distribute aid on his account ; but they had nothing to distribute.”\*

Passing by the less fatal drought of 1844-’45, we hear of no more dry years up to 1877, the beginning of the greatest and most terrible *secca* of all.

The winters of 1875 and 1876 were both severe, with torrential rains, causing much damage to the crops and cattle. There was political mismanagement in the province ; this,

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\* Pompeu : Memoria sobre o Clima e Seccas do Ceará, p. 20.

and the floods, with their resulting losses, had nearly emptied the treasury. In the interior the laws were only half enforced, and many cases of robbery, and even murder, were recorded.

In February, vague rumors of drought began to circulate in Fortaleza. The rains about the city had been few and light; letters from the interior stated that the first plantings had been lost, and that cattle were suffering from lack of pasturage and water. There the *chuvas de cajú* had not been felt at all, and there were no January rains. By the first of March, the prospect was still worse; the bishop ordered prayers in all the churches, *ad pretendam pluviam*.

Still there were hopes of a good year. The winter, it was said, might be delayed without causing irreparable damage to the crops and herds; rains would come in March and April, and all would be well. So reasoned the Cearenses, and so reasoned the Government officers at Rio; if, indeed, they ever gave a second thought to the short notices which appeared in the papers. But March and April and May passed on, and in some districts there were no rains at all. The scanty pasture of January was dried up; the plantings had failed utterly; all through Ceará the drought was declared.

Already there were stories of want and hunger at Icó, Principe Imperial, twenty other interior towns; at Telha the poor people were suffering terribly, and even famine-deaths were reported among them. Everywhere the peasants were deserting their plantations, and crowding to the larger villages in search of food. The herdsmen, hopeless of saving their cattle, began to slaughter them to secure the hides and tallow; hence, for a time, there were deceptively large exports of these products. While the cattle slaughter lasted,



there were few deaths from absolute hunger ; the poor went begging of the rich, and readily obtained bits of meat. But when the herds were gone, the peasants began to starve. From the villages there went up a great cry for food ; two hundred thousand people were begging from door to door.

In April and May good men listened and gave freely ; in June and July good men turned away and cried in their hearts to God, for they had nothing to give. The Cearenses are kind-hearted and hospitable ; many an one gave up his own poor dinner to feed his poorer brother ; but they could not give forever. The herdsmen were ruined ; the farmers had nothing to sell ; the merchants could not collect their bills ; the whole country was poverty-stricken. In a few spots, where the grass was not all gone, bands of cattle-thieves kept thinning out the remaining herds. The peasants, when charity failed them, wandered through the dry woods looking for *mucuman*\* seeds, and the roots of certain shrubs, like the *páo de mocó*. As the summer wore on, many, even of the richer class, were obliged to resort to this unwholesome food.

Small supplies of provisions came in from other provinces, and were sent to the interior towns on the backs of horses ; but often the animals died on the way, or the caravans were robbed. In some places, where they had no horses, provisions were brought in on men's shoulders. The few baskets of mandioca-meal, obtained in this way, were retailed by the merchants at fabulous prices—frequently eight or ten times above the normal—so that only the rich could buy.

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\* The *mucuman* is like a sea-bean, and belongs, I believe, to the same genus. It contains a starchy substance, which the starving people used in place of mandioca-meal ; but it almost always brought on dropsy and death. These poisoning cases were frequent during the drought.

The universal credit system of Brazil created fearful evils. Merchants, who saw ruin staring them in the face, were hard creditors; to save themselves, they hastened the ruin of others, seizing the few cattle that remained, and the little property that might be sold to obtain food. Let us not unduly blame these men. Many of them were ruined with the rest, because they would not claim their own.

Long, long was the summer of 1877. Drought blazed in the sertão; the birds fell dead from leafless trees; foxes and armadillos died in their holes; insects disappeared. Drought withered the sea-coast woods, dried up the streams, brought thousands of refugees to Fortaleza and the interior towns. Drought sent famished cries to Rio, but the mad Government could not believe that its people were starving: cried back through its journals that the whole story was a political scheme, with hardly a foundation of facts. Late in the year, they reluctantly voted a million of dollars to the sufferers, and this was applied very slowly. The Brazilian *people* were not so dull-eared. At Pernambuco they had an aid commission for Ceará in May. Maranhão and Pará were not far behind; and then the populace of Rio took up the work, organized fairs and parties and balls to aid the sufferers, levied subscriptions on the public streets and in the parks and gardens, freighted ships with provisions. Not as New York would have done; but the subscriptions were large for Brazil, and would have been larger had the real magnitude of the evil been known.

October, November, December, passed slowly, and the Cearenses began to look forward hopefully to the January rains. But meanwhile at Fortaleza, Icó, Telha, Príncipe Imperial, the peasants had gathered by thousands, living in hastily constructed huts and begging daily for food. Relief

commissioners were appointed, but they had little money, and hardly any provisions at their command; many of them were composed of incompetent men, and some were palpably dishonest. Private charity saved many, but already, in July and August, scores of deaths from starvation were recorded. In October and November these deaths were counted by their daily rate: ten, fifteen, twenty even in a single refugee camp, where perhaps ten or fifteen thousand were gathered. Vastly more numerous were the deaths from disease. The filthiness of the camps, and of the refugees themselves, combined with the lack of food, made them a ready prey to



Group of Refugee Children (from a photograph.)

epidemics. First came fevers; then the curious, paralytic *beri-beri*; then small-pox, which, happily, was not widespread at this time, though it steadily gained ground. The authorities neglected to enforce any efficient sanitary measures; the Provincial Government was weak, and the people looked on helplessly. Throughout the province, probably fifty thousand people died during this first famine-year.

At the beginning of 1878 the condition of the province

was this: The open country was generally abandoned; nearly the whole population was gathered about the villages, and the plains were left, black and desolate. A large proportion of the cattle had perished; the plantations were withered except on a few fertile hill-sides, as at Baturité, where running water still came down from the springs. Between the interior towns and the coast there was a band of almost impassable wilderness, where the ground was utterly dry, where not so much as a blade of green grass appeared, where the river-beds were strips of heated sand and clay, yielding no water, even by the usual method of digging holes to the subsoil. At Icó and Telha, the death-rate, from starvation alone, was more than a score each day. These desolate plains and famishing people were ruled by a weak government; the provincial treasury was almost empty; provisions sent from Rio were locked up in the public storehouses, held back, no one knew why, when the need was most urgent.

January came and crept on, day after day, with clear skies. After awhile there were a few little showers, just moistening the surface, and bringing up stray blades of grass; but the first planting failed utterly.

February. Men's hearts sank ever lower; the peasants cast longing eyes to the bright blue above. In the villages, they formed penitential processions, cutting themselves with knives, carrying heavy stones on their heads, and crying and beating their breasts. Poor things, it availed them little enough! The winter did not come, and the death-lists rose to frightful figures.\* Drought-stricken, starving Ceará saw

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\* A friend, who was at Acaracú just before the great exodus took place, affirms that eight hundred deaths occurred there from the 7th to the 15th of February, and that the larger portion of these were caused by starvation. It is difficult to be-

another year of drought and starvation coming down upon her.

First of March, and no rains. Government aid almost withdrawn. No food left in the villages; no hope for the starving peasants. Then, as by one impulse, a wild panic caught them. Four hundred thousand, they deserted the



The Exodus.

sertão and rushed down to the coast. Oh! it was terrible, that mad flight. Over all the roads there came streams of fugitives, men and women and little children, naked, lean, famine-weak, dragging wearily across the plains, staining the rocky mountain-paths with their bleeding feet, begging,

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lieve this; yet I know that my informant had every opportunity for observation, and it is not probable that he exaggerated wilfully. In Crato, from February 10th to March 18th, the number of famine-deaths recorded was six hundred and sixty-four; in Corin, during the same period, nearly four hundred were registered. This includes, in part, the time of the great exodus, when the mortality was greatest.

praying at every house for a morsel of food. They were famished when they started. Two, three, four days at times, they held their way; then the children lagged behind in weakness, calling vainly to their panic-wild fathers; then men and women sank and died on the stones. I have talked with men who came from the interior with the great exodus; they tell stories of suffering to wring one's heart; they tell of skeleton corpses unburied by the road-side, for a hundred thousand dead\* were left by the way. If you ride to-day through the sertão you will see, in many places, a wooden cross by the road-side, marking the spot where some poor wretch expired. So let them rest. Poor peasants they were, ignorant and coarse and filthy; but they are canonized now, with the glory of great suffering.

By the first of April, the interior of the province was almost deserted; but now the scene of suffering was transferred to the coast. At Fortaleza, nearly a hundred and fifty thousand people were gathered; at Aracaty there were eighty thousand; at Granja and Baturité, lesser armies; all crying for food, crying with the eloquence of starvation, showing their emaciated bodies, weeping and cursing before the doors of the aid commissioners. Even if supplies had been never so abundant, the commissioners might well have quailed before such a demand. So great was the flood, so sudden in its panic-burst, that all the available supplies were too little. Men who had waited all day to receive a scanty ration, had to turn away, empty-handed. Long processions of mendicants passed through the streets, begging at every door; many were utterly naked; many fell in the streets from weakness. Some who had food given them could not swal-

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\* Some say a hundred and fifty thousand.

low it, so great was their exhaustion ; they died even in sight of plenty. More than one body was picked up in the very streets of Fortaleza.\* The merest scraps of food were accepted with tears of gratitude ; garbage-piles were searched for melon-rinds and banana-skins. A trader at Baturité told me that a refugee asked permission to kill rats in his store, that he might eat them. Dead horses and dogs were devoured ; there are dark stories of cannibalism which may be true. God only knows, for little heed was taken of horrors in this time of dismay.†

But now came good news from Rio. A year of suffering was not enough to open the official eyes, but this terrible stampede did it. The new Sinimbú ministry awoke to the situation ; it acknowledged that there was drought in the sertão. The senators and delegates woke up and voted a fund of ten million dollars to the sufferers. A new president was appointed to Ceará ; the provincial government was resolved into a great aid commission, almost the only business of which was to provide for the poor. Loads of provisions came in by every ship ; sub-commissions were appointed for

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\* I have a series of photographs, which were taken in Fortaleza at this time, and they speak more eloquently than words can of the terrible suffering which existed. The photographers told me that the subjects were picked up at random in the streets, and the most were found, as they are seen in the pictures, perfectly naked. I can compare these photographs to nothing but the pictures of Andersonville prisoners, which were published during the war ; it seems impossible that such skeletons could have lived.

† I have little reason to doubt one of the stories, which came to me from a reliable source. My informant stated that a man, who had been four days without food, was lying alone in his hut, when a child came in. The child was well fed and fat, and the man was ravenous with hunger. He enticed the child to him, killed it with a knife, and ate a portion of the body ; but a few hours after, he died from the effects of his horrible feast. Another story is of a woman, who killed her little brother for food. I believe that such cases may have arisen from insanity, a common result of starvation.

every village that was not utterly deserted ; money and supplies were furnished liberally.

This was well, but with it a fresh evil arose. The money should have been used in giving honest work to the people ; they should have been employed in constructing railroads, improving the harbor—anything to keep them from idleness. But the government gave alms, daily rations to be had for the asking. So it came about that the refugees looked upon this charity as their right ; they lived in indolent inaction ; would not work when they could. Free steamer-passages were given to those who wished to emigrate, and thousands went to the neighboring provinces ; single vessels were freighted with many hundreds.\* But the refugees carried the same mendicant spirit with them ; in Pará and Pernambuco they lived on public charity, or, if they engaged for awhile in steady work, they soon returned to street-begging and the public rations.

At length, in July, the Government sent engineers to Ceará, with orders to locate two railroads and employ on them all the able-bodied refugees. At the head of this work was placed Sr. Carlos Morsing, a Brazilian by birth, half-German by descent, and American by education. This gentleman took up his task with commendable zeal and enthusiasm. He was opposed by politicians and the adverse press ; the refugees, at first, cried loudly against his rule ; but with plenary powers from Rio, and ready aid from the president, he fought his way on steadily. There was an old railroad from Fortaleza to Pacatuba, about thirty miles ; this was in bad condition, and a dead loss to the company that

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\* The refugees were often crowded on the open decks, and poorly fed ; their filthiness almost made the ship unendurable to the other passengers. In one or two instances small-pox broke out on board, causing a fearful mortality.



built it. The government bought this at a low price, and work was immediately begun on an extension to Baturité. A similar railroad was started at Aracaty. By December, fifteen thousand workmen were employed. The men received fifteen cents per day, besides their regular rations, which were stopped if they refused to work. Various public buildings were commenced at Fortaleza and elsewhere; the relief service was placed in better hands, and, altogether, a better state of things seemed to be at hand.

But now, following in the wake of famine, came pestilence. The refugees were huddled together about Fortaleza and Aracaty, barely sheltered from the sun in huts of boughs or palm-leaves. The camps were filthy to the last degree; no attempt was made to enforce sanitary rules, and even on the sea-beach the peasants never washed themselves. To these camps came fever in its deadliest forms. For a time more than a hundred died each day at Fortaleza, and though this rate was lessened in July and August, it was only to give place to the greater death-roll of small-pox.

At this time the adventitious population of Fortaleza had greatly decreased, from emigrations and death; yet the whole number would not have fallen far short of 65,000, besides the normal population of about 25,000. During the three months of August, September, and October, the number of small-pox deaths recorded in the government records was 1,472. Vaccination was never enforced here; the peasants avoided it, either from superstition or because they feared the pain. Crowded as they were, often a score in one hut, the disease ran like wildfire. On the 1st of November, 99 small-pox deaths were recorded in the city, and on the 2d, 124. From this time the rate increased steadily, until it reached a frightful figure. On the 30th of November it was

574, and the entire number recorded for the month was 9,834, besides 1,231 from other diseases, making 11,065 in all. But this includes only the recorded burials in the public cemeteries. It is well known that many, despite of the law, were buried in the woods, or taken out to sea on *jangadas* and sunk.

Still the death-rate went on increasing steadily. On December 10th, 808 bodies were buried at the small-pox cemetery, and 36 in the city ground, making 844 in all. This was the maximum; during the rest of the month, the rate decreased as steadily as it had risen. The entire number of small-pox burials registered during this month was 14,390, and there were over 1,000 deaths from other diseases. We find, then, that during the two months of November and December, the whole number of recorded deaths in Fortaleza was over 26,000, or between one-third and one-fourth of the population. Allowing for illegal and unrecorded burials, it is probable that fully one-third of the people perished during these two months.\*

Meanwhile, the epidemic had spread to the surrounding villages, where, in some instances, the death-rate was proportionally even greater than in Fortaleza. In Pacatuba, out of a population of 3,500, the rate for nearly a week was over 100 per day. At a few places only—notably Baturité—the

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\* During the year 1878, the entire number of recorded small-pox deaths at Fortaleza was 24,769, and from other causes, 33,236; this latter number includes the deaths, during the early part of the year, from fever, *beri-beri*, and starvation. The dead from the refugee-camps of Mucuripé, Cocó, and Alagadiço, suburbs of the city, were buried in small cemeteries, and their number is not recorded.

From January 1st to July 1st, 1879, when the epidemic was dying out, the number of small-pox deaths recorded in the city was 2,340.

These, and other statistics, were obtained through the kindness of the editor of the "*Cearense*" journal.

epidemic was stayed by vaccination and effectual sanitary measures.

The entire mortality in Ceará, during 1877 and 1878, was probably not far from 500,000, or more than half the population. Of these, 50,000 died of starvation and disease during the first year; 50,000 during the months of January and February, 1878; during March and April, which included the great exodus, at least 150,000 perished, the most from starvation. Fever and *beri-beri* carried off 100,000, and small-pox, 80,000 more; the remaining deaths were from various diseases, the majority more or less directly traceable to starvation and weakness, and unwholesome food.

My personal observations of this great calamity were confined to a part of December, 1878. I reached Fortaleza on the 19th of that month, when the death-rate from small-pox had gone down to about 350 per day. Aided by His Excellency, President Julio, and by Sr. Morsing, I was able, during the ten days of my stay, to make very careful observations, both at Fortaleza and in the interior. It is not a pleasant subject; but as the facts I gleaned may have some historical value, I will epitomize them here.

At first I saw very few signs of the pestilence. The city streets were clean and neat; here and there I noticed refugees standing idly by the street-corners, and some of these had small-pox scars on their faces. About the public store-houses there were carts and porters carrying provisions; no signs of starvation were apparent, for here the people had been well fed since May.

I stopped to engage a room at the little hotel; the landlord, after some questioning, acknowledged that there were two small-pox cases in the house; but added, truly enough,

that no better place could be found ; the sick here were carefully isolated, and well cared for.

I was much impressed with the apparent indifference of the people to their danger. The pestilence was, indeed, an universal subject of conversation, but everybody seemed to rest in an easy fatalism or blindness ; speaking of the daily death-rate as one tells of the killed and wounded in a battle—a real event, but far away. I did not hear of a single resident who left the town on account of the danger ; there was the usual amount of dissipation and flirtation ; the market-square was crowded, and men drove hard bargains ; in outward appearance the little city had hardly changed since 1876.

Later in the day, I walked out to the refugee camps on the southern side of the city. The huts were wretched beyond description ; many were built of boughs, or of poles, covered with an imperfect thatch of palm-leaves, and patched up with bits of board and rags. Here whole families were crowded together in narrow spaces ; filthy, as only these Ceará Arabs can be ; ragged, unkempt, lounging on the sands, a fit prey for disease. No measures had been taken to cleanse the camp ; the ground, in many places, was covered with filth and refuse ; water, obtained from a pool near by, was unfit to drink. If the pestilence was hidden in the city, it was visible everywhere about the camps. Half-recovered patients sat apart, but scarcely heeded ; in almost every hut the sick were lying, horrible with the foul disease. Many dead were waiting for the body-carriers ; many more would be waiting at the morning round. Yet here, among the sick and dying and dead, there was the same indifference to danger that I had noticed in the city. The peasants were talking and laughing with each other ; three or four were gathered about a mat, gambling for biscuits ; every-

where the ghastly patients and ghastlier corpses were passed unnoticed ; they were too common to be objects of curiosity.

Most of these people had come from the interior with the great exodus, and they had been fed by the Government for eight or nine months. As easily managed as children, they were, like children, fractious, and careless, and improvident. From the first, they should have been placed under rigid military discipline ; with the guidance of competent persons, they should have been made to construct good houses, arranged in streets and sections, for their better government ; cleanliness of body and surroundings should have been enforced under the severest penalties ; and every able-bodied man and woman should have been employed in work of some kind. But Brazilians everywhere are neglectful of sanitary measures ; witness the dirty, badly-drained Rio streets, where yellow fever walks unstayed ; witness the epidemic that ran through the army during the Paraguayan war, carrying off far more than the enemy's bullets.

In the morning I walked farther away from the city, where the strips of woodland were as bare as a winter landscape at home, and only a few mandioca-fields had escaped the general ruin. Here and there I passed lonely huts. Once I stopped to ask for a drink of water, but the woman who was sitting before the door told me that she had none, for the nearest pool was half a mile away, and she was sick and could not go to fill the calabash. No doubt her story was true, for her face was scarlet with fever, and she complained of a throbbing headache, constant symptom of the dreaded disease. Within the hut were three children ; one, like the mother, was suffering with fever and headache ; another was covered with small-pox pustules ; the third child, a baby, was just dying. A man who was passing brought

some water to the hut. I suppose that the woman and children were carried to the lazaretto on the following morning, but among so many patients they could receive little care. The three hospitals were overcrowded, and new patients could only come in as the daily deaths and few recoveries left the cots vacant.

There was a cemetery near the town, where the dead were buried decently, in separate graves. But this was the city ground, from which bodies of those who had died of small-pox were generally excluded. Two miles west of the city, a much larger ground received the pestilence dead. Every morning searchers examined the huts, and carried away the bodies ; as they were not allowed to take their burdens through the streets, they carried them around, either on the southern side, by a little-used path, or along the beach. At sunrise, when I went to bathe in the surf, a constant procession of these body-carriers was passing. Sometimes the dead were wrapped in hammocks and slung to poles ; oftener they were simply tied to the pole, two or three, perhaps, together, and so borne by two or four carriers ; child-corpses were thrown into shallow trays which were carried on men's heads. By eight o'clock the stream had lessened ; but all through the day the ghastly sight was repeated at intervals. People who lived near the beach became accustomed to this constant funeral, and gave little heed to it.

At the Lagoa Funda ground the dead were buried in trenches, twelve together ; " unless," said one of the overseers, " they come too fast for the diggers ; then we put fifteen or twenty in, *conforme*." The man had been here so long that he regarded the bodies as so many logs. For myself, I was not yet educated to this point ; sick and faint, I turned away from the horrible trench and the fetid air. The

bodies were buried deep, but under loose sand ; two thousand of these trenches were poisoning the air, and the stench was almost unbearable. It is recorded of the London plague that men died in the pits they were digging ; here the workmen had fallen dead, not from the disease, but from asphyxia, the result of foul air ; this happened only where a new trench was dug near an old one. It was very difficult to obtain men for this service, and no wonder.

One of the largest lazarettos was close by the gate of this cemetery ; indeed, all the bodies had to pass between two of the buildings, and through the open windows the patients could look out upon the endless procession. I suppose that they were too ill to heed it, but to the poor *sertanejo* who saw his friend brought here, the hospital must have been almost identified with the cemetery. I was told that ninety per centum of the patients died, and it was a matter of convenience to have the burial-place so near.

At this time the hospitals were of little value, for they could not contain the thirty thousand sick, and the wards were so overcrowded that the patients received less care than they would have had in their own huts. It seems probable to me that, in a place so thoroughly infected, slight cases may have been aggravated by fresh poison, until the mortality was greatly increased. Be this as it may, the death-rate was very high here, and the disease assumed its worse forms.

As in many other epidemics, the mortality was greatest among strong, vigorous men ; children often escaped. I was told of one merchant who had twenty-four workmen in his employ ; of these, seventeen died during November and December. Another man had nine clerks in his office, of whom he lost six within two weeks. Whole households were swept away. In many of the richer families, the ladies

were driven to the most menial services, because their servants had died, and it was impossible to obtain new ones. Vaccination was not always a complete preventive, but it invariably served to check the violence of the disease, so that the patient generally recovered. It was reported—with what truth I do not know—that men had been known to have the small-pox twice within a few months; in this case the second attack was very slight.

When the small-pox scourge was at its height, a strange and terrible disease appeared at Fortaleza; by some this was supposed to be a new epidemic, and there were fearful whispers of black plague. It is probable, however, that this was an aggravated form of small-pox; it was characterized by the appearance of black spots on the body, and I believe that the cases were invariably fatal, even before the pustules appeared. About the end of December, the wife of the provincial president was attacked with this “black small-pox” and died within two days.\*

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\* A medical friend has furnished me with a note on the black small-pox, from which I extract the following: “Dr. James Copeland, in his *Dictionary of Practical Medicine* (American Edition, 1859, vol. iii., p. 894 et seq.), considers that in this variety of small-pox there is greater contamination and alteration of the blood than in the ordinary form. He says: ‘The general appearance of these cases is often peculiar, and they are the most distressing and frightful manifestations of disease which can present themselves to our observation. . . . All the symptoms combine to impress the mind with the idea of a pestilence exceeding in severity and frightfulness of its aspect both the plague and the yellow fever; and to suggest the idea of a general dissolution and putrefaction of the body, even before life has taken its departure. This malady was of more frequent occurrence formerly, before the introduction of inoculation and vaccination, than now, and was more common in some epidemic visitations than in others. . . . It is even now the not uncommon form of the disease among the dark races, especially the negro, and particularly when the distemper spreads by the inspiration of miasma from the infected. . . . Dr. Gregory has remarked, what I have reason to believe to be correct: namely, that death may take place in consequence of this remarkable condition of the blood, before any unequivocal signs of small-pox are developed.’”



Amid all this suffering the people celebrated the Christmas festival, with music and feasting and rejoicing. Of the two thousand men and women who knelt in the church, probably many were infected, but no one seemed to fear the contact of a neighbor. Before the service, some who were dying were brought in hammocks to the church-door, to be confessed.

I believe that the priests of Fortaleza did their duty well, all through the pestilence. There were, indeed, no funeral services and few ante-mortem confessions; the death-harvest was too great. But I often saw the younger priests visiting the worst infected camps, not with attendants and gorgeous trappings, but alone, doing their work as the old missionaries did, in the face of danger.

At *Pacatuba* I found the state of affairs even worse than at Fortaleza. More than half the inhabitants were stricken, and the daily death-rate was frightful. Here, crawling about the railroad station and begging, were diseased children; here, at the house where I stopped, the servants were convalescent patients. I visited many huts in succession, and in each there were from one to five sick.

From this point, almost to *Baturité*, I rode along the line of the new railroad, where thousands of workmen were employed. Here the change was as agreeable as it was great. The workmen and their families were domiciled in good barracks, and the sick were rigidly isolated; sanitary rules were enforced to some extent. Vaccination had been introduced, and no well man was permitted to be idle. Under these circumstances, I found a steady improvement as I advanced, until I felt that I had left the pestilence and its horrors behind me. Then, indeed, the ride became a delightful one. Along the hill-sides there had been a few showers, and the

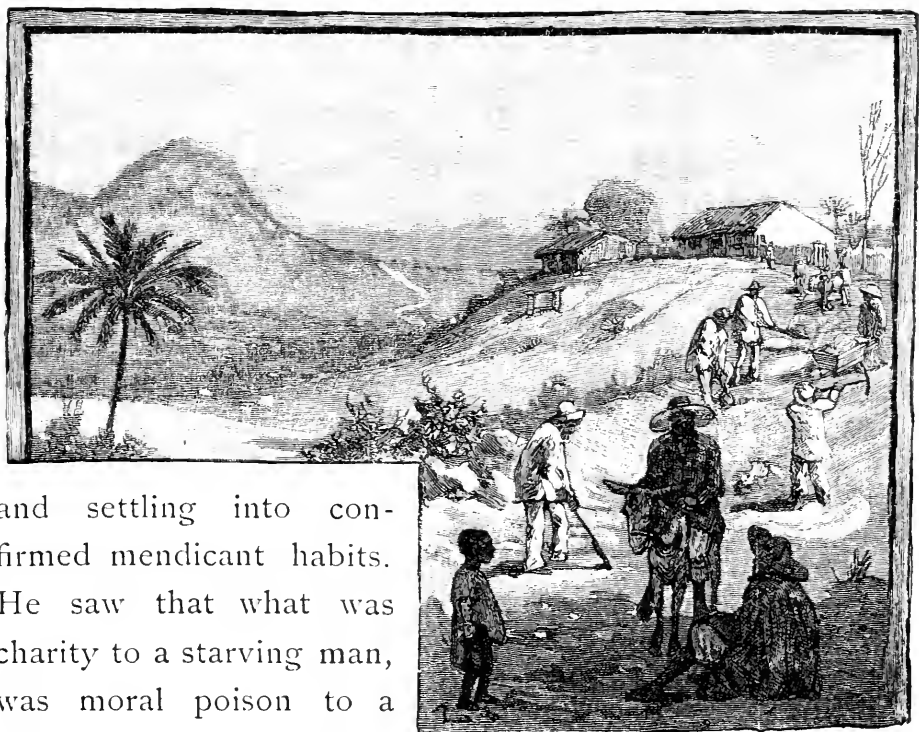
trees, which had been bare for eighteen months, began to put out a few timid buds. At Baturité there was running water, for the springs had held out even through two years of drought; here the hill-sides, in many places, were fresh and green, with bright plantations and tangled forests; it was an oasis in the wilderness.

At Baturité, when the drought commenced, there dwelt a quiet, unassuming man, named Dr. Gomes Pereira. He was a lawyer, but practised very little; nearly all his time was occupied in managing his large estate, for he was one of the richest men in the province. The Government, appreciating his worth, or his riches, made him *Promotor Publico*; that is, a kind of general overseer of all the public buildings and works in this vicinity.

Early in the first famine-year, an aid commission had been established at this place, with Dr. Pereira at the head of it. When the great exodus took place, he worked night and day; when public money was wanting, he put his hand in his own pocket, or bought on his own credit. Fifteen thousand people took refuge here, and many more passed through, on their way to the coast. The first rush was too great, even for his generosity; his credit was exhausted, and provisions could not be brought in fast enough, so that even here, men died in the streets. Still he worked on. The Government paid for the provisions that he had bought in his own name in March and April, so he had wealth and power yet; they might have paid for his private charities, but he would not let them.

This gentleman, who did not bluster, was a practical man, and had the gift of government. To the unwieldy mass of half-wild peasants, he brought order and law, so that this was the best-governed camp in the province. Already, in

1877, he had made a great step in advance of the other aid commissioners. He saw the refugees coming in every day, begging in the streets or receiving food from the commission,



Refugees working on the Roads.

and settling into confirmed mendicant habits. He saw that what was charity to a starving man, was moral poison to a strong one. He foresaw that these refugees must be fed through long months, before they could return to their fields. And he set them at work.

He was *Promotor Publico*, as I have said. He set five thousand refugees to building a new town hall, a new church, a prison, cleaning streets, cutting roads, what not, to give them honest work. When the exodus came he enlarged his works, paying always with rations and a little money. There were political cries against him, of course; he could afford to laugh at them. He made the men build thatched houses; I found that these barracks were even better than those I had seen along the railroad—large, well ventilated, and a

sufficient protection. They were set around great squares, and in the middle of every square there was a larger building which served as a kind of town hall. The food was given in exchange for labor; only when the peasants were sick, or old, or too feeble from starvation to work, they were fed gratuitously. The working ones received about ten cents per day beyond the rations. These latter were quite as good as the peasants were accustomed to; mandioca-meal, jerked beef and so on, in generous measure; when it was attainable, fresh meat; and always plenty of saccharine food to keep off the scurvy.

It was discovered that some of the refugees were drawing two or three rations where they had a right to but one; lazy ones did not prepare their food properly; the health of the people was affected by irregular living. The aid commission resolved to issue cooked rations. Great "hotels" were established, palm-thatched houses like the barracks, but covering a quarter of an acre. Here the peasants came every day, with calabashes or bowls; they were seated in rows, and the rations were served out to each in equal measure. There was a separate room for the newly arrived, who were still weak from famine; they received more nourishing food, "until they get fat enough to go with the rest," explained Dr. Pereira to me: pointing out, with some pride, the result of his fattening process. In truth, it was worth seeing, how the poor, lean bodies and sunken eyes and bloodless faces were getting life with their generous fare. Aged and feeble ones had these finer rations always. Besides the cooked victuals, each peasant received a weekly parcel of coffee and sugar: the helpless and old were clothed, coarsely, but well, at Government expense.

There were two hospitals, one for women, the other for

men: both in charge of the good Dr. Sampaio. The sick were laid on clean beds, and tenderly cared for. But the hospitals were not very full when I saw them; for what with system, and the enforcement of sanitary rules, and work in place of disease-feeding idleness, the epidemic all but disappeared. Small-pox came, as it did in Fortaleza; but the commission was quick with the preventive; Dr. Pereira vaccinated fifteen hundred refugees with his own hand; the sick were isolated in a special hospital, two miles out of town; and so effective were these measures that the disease almost disappeared. In December of this year the daily death-rate at Baturité was one in three thousand; and the most of these cases were among the new arrivals. In Fortaleza, at the same time, the rate went as high as one in ninety, and at Pacatuba it was one in thirty.

Another feature at Baturité was the forming of schools. These were for boys alone; among the Brazilian poor, girls are hardly ever educated. The boys were taught to read and write, and some of them to cipher. The schools were held in the thatched town halls of which I have spoken. The pupils sat on one long bench, dirty and unkempt and bare-legged; for these Ceará peasant-boys wear only a cotton shirt, and that, I think, is never washed. The boys were obliged to wash their faces; that was as far as cleanliness could go among the refugees. Whatever else Dr. Pereira did, he never succeeded in making the peasants wash their bodies.

Bare-legged and dirty, the boys were getting their little leaven of civilization, which will be felt in after years. You cannot catch these Arabs and turn them at once into enlightened people; it will take generations of schoolmasters to do that. But somewhere you must begin. Future statesmen

these were not ; they will be peasants, like their fathers, but a shade better, a shade less dirty, because of this good deed. And deeds, good or bad, are never lost, any more than matter and force are ; keep that in your souls, O ye thousands of silent masters !

I think now of Dr. Pereira, the plain man, the hero of deed without bluster : I think of my friend as I saw him in that great, unfinished shed, with the bare-legged peasant-boys, and the peasant school-teacher. The boys stood up in a row out of respect for their visitors ; the summer breeze came in under the eaves, and through the open door ; it tossed the rough locks, and played with the dirty shirts ; it fanned our cheeks coolly, and brought us wafts from the yet green mountain-woods. Do you think that this quiet man, in the palm-thatched school-house, deserved less praise than the heroes who telegraph " enemy's loss was immense ; " or whoop over their hundredth scalp-lock ?

We rode about Baturité to see the public works that were being carried on with these peasant laborers. " The commission does thus and so ; the commission plans that," said Dr. Pereira ; but everywhere the workmen came with " Senhor the Doctor, how is this to be done ? " " Senhor the Doctor, where shall we place that ? " " Senhor the Doctor, will you hear my grievance, and mine ? " " Will you give us such and such favors ? " Oh ! it was easy enough to see the master-mind. The peasants knew ; and they knew whose was the kindest heart in the village, whose ear was readiest, whose purse was longest. The Doctor wrote orders on scraps of paper : " Give this man so much coffee ; " " Supply rations for these new-comers ; " " Set the bearer at work in such a place." He went to the great kitchen (apologizing for taking so much of my time, forsooth !) and there he

must taste the rice and meat, examine the mandioca-meal, question the cook. Then again to the cemetery, the prison (he was *Promotor Publico*, yet, you must remember), where everything had to come under his eyes. So I perceived that this man had found a grand truth: "If you want a thing well done, see to it yourself."

The peasants crowded around him, sometimes to make requests, oftener to look at him only; if he dismounted for a moment, a dozen ready hands were there to hold the bridle; the children stretched out their hands for a blessing; the sick smiled when he passed by. And with the poor folk, as with the rich, you can tell in a moment whether a man be obsequious or good-willed; your Ceará peasant is a wonderfully transparent fellow, in his way.

Such unwritten tragedies as there were under these rags! We found one woman weeping quietly; a bronzed, muscular woman this was, but her rags were clean, and she had four little black-eyed children, as pretty, with their bare legs, as your darlings are, good madame, and as intelligent-looking; none the less praise for school-rooms and books, and neat shoes and stockings. Our bronzed woman was crying, and Dr. Pereira went and spoke to her at once. "What is the matter?" said he.

All the floodgates gave way then, and this peasant woman sobbed and sobbed with the grief of her torn heart. The Doctor waited quietly and gravely; he was used to such scenes. "What is it?" he asked, at length.

The woman had just come from the interior. Her husband, a Portuguese immigrant, had been a farmer in a small way; he was very kind to her. They clung to the little farm all through this long drought, until October; then they could yet leave their home with a horse to carry the children.

“But,” she sobbed, “the horse died, and then my husband was hungry and sick, and he died; and the children, they had nothing to eat, and two of them died, and I buried them by the road and put a cross over them; and now I pray for their souls. We have been here three weeks, and we have enough to eat, thank God; the children are growing fat; look, your honor!” and she caught the youngest and kissed it, as you, madame, will kiss your pretty one when the father goes. “We thank God, we do,” wept this mother; “and you mustn’t mind if I cry sometimes. We were so happy in the good years.”

“Come to my house this afternoon,” said Dr. Pereira. That was all; but in the afternoon this family had clothes to put on in the place of their rags, and they had a hearty dinner of fresh meat, and kind words from kind hearts, and an assurance that they would be looked after. A small matter, think you? But this family had nothing in the world; not even clothes, but only rags.

They were not the only visitors that afternoon; the Doctor was busy always with new-comers; it was only toward night that he could get an hour of rest. Quiet he was, always, governing the fifteen thousand under his charge.

In the evening, I remember, there was a procession of some kind going up to the church; the crowd of peasants cheered lustily as they passed the Doctor’s window; but he kept back in the shade, while the rest of us looked out at the crowd in the torchlight. Brave-hearted, pure-hearted friend! When he rode over the hill with me in the early morning, and said good-by, because he must go back to his refugees, did I not vow that this hero should be known, and his deeds appreciated?

All over Ceará there was weakness, official incapacity,



official sin. At Rio there was dawdling, and trifling with the famine question ; and five hundred thousand lives paid for it all. In Baturité, there was one good man, one general who did not kill people, but saved them from being killed ; one man, in God's image and after God's own heart. Better that I should leave him there in his happy obscurity. But a good deed told is the leaven of a thousand other good deeds. Feebly I have told ; strongly, nobly this great man worked. He saved ten thousand lives, and he does not know at this day that he has done anything remarkable. That is the crown of his greatness.

## CHAPTER XIV.

### DOWN THE COAST.

FROM the roadstead at Fortaleza, the flat-topped mountain of Pacatuba is plainly visible, and for an hour after we leave the anchorage, it still appears dimly, a constant landmark. As we steam on toward the east, we catch glimpses of other hills, far from the shore ; but these disappear after the first day ; then there are only white sand-ridges, lining the coast for hundreds of miles.

Rarely we descry fishing-huts by the water's edge, and *jangadas*, sailing-rafts like chips, pass close under the rail. Beyond these, we see no signs of life except at *Rio Grande do Norte*, where there is a fort, and farther back a town with white church-towers appearing over the sand-hills. We have to endure the customary delay here, while mails are exchanged ; a Brazilian postmaster does nothing in a hurry, and commerce and pleasure alike must await his convenience.

The next stopping-place is at *Parahyba*. The town is on the Parahyba river, some four or five miles back from the sea, and only light-draught vessels can ascend thus far. Our steamer passes up two miles with the high tide, and we go on to the city in a boat, while the captain prudently orders the vessel back to an anchorage outside the bar.

Parahyba is a sleepy little country city, the capital of a

small province, and deriving some commercial importance from its exports of sugar. The sugar-plantations are on the lowlands near the river; farther back, the country is dry and sandy, like that of Ceará. Here, too, the drought was felt severely, and from the interior, thousands of refugees flocked to the river, encamping about the city as at Fortaleza. The rest of the story is told me with ghastly brevity by a Parahyba merchant.

“How many *retirantes* came here?” I ask.

“About twenty thousand.”

“Did they emigrate? I see none here now.”

“No, sir. Very few emigrated from this place.”

“Have they gone back to the sertão?”

“That is impossible; the sertão is uninhabitable.”

“What became of them, then?”

“They died.”

Starvation and pestilence did their work well here. I know not how many are left of the twenty thousand; some, let us suppose, have found work on the surrounding plantations, and some are in the city yet. But on all sides we hear the same story: “They died.” The scourge did not fall on Ceará alone. Eight provinces, at least, were stricken, and in every one there were famine-deaths.\*

I fear that the periodical droughts of the sertão will long be a barrier to its colonization. Much might be done to lessen the evil, by proper systems of irrigation, by forming reservoirs and artificial lakes, or by sinking artesian wells. But all these works are expensive, and few Brazilians will

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\*I have no data on which to base a calculation of the total mortality; but it is certain that many of these provinces suffered terribly. More than a fourth of the population of Brazil was affected by the drought, and the number of deaths can hardly have been less than three hundred thousand, outside of Ceará.

trouble themselves to guard against a possible evil as long as they can enjoy present prosperity. Even the terrible lesson they have received will be remembered only as a thing of the past, and not as a warning for the future. The next great drought may come a hundred years hence, when the population is twice or three times as great as it was in 1876. I dare not think of the possible result of such a calamity. It may be that men will be wiser before that time; that the future historian may not have to write of pestilence brought on by culpable neglect—of thousands sacrificed to official inaction and official greed.

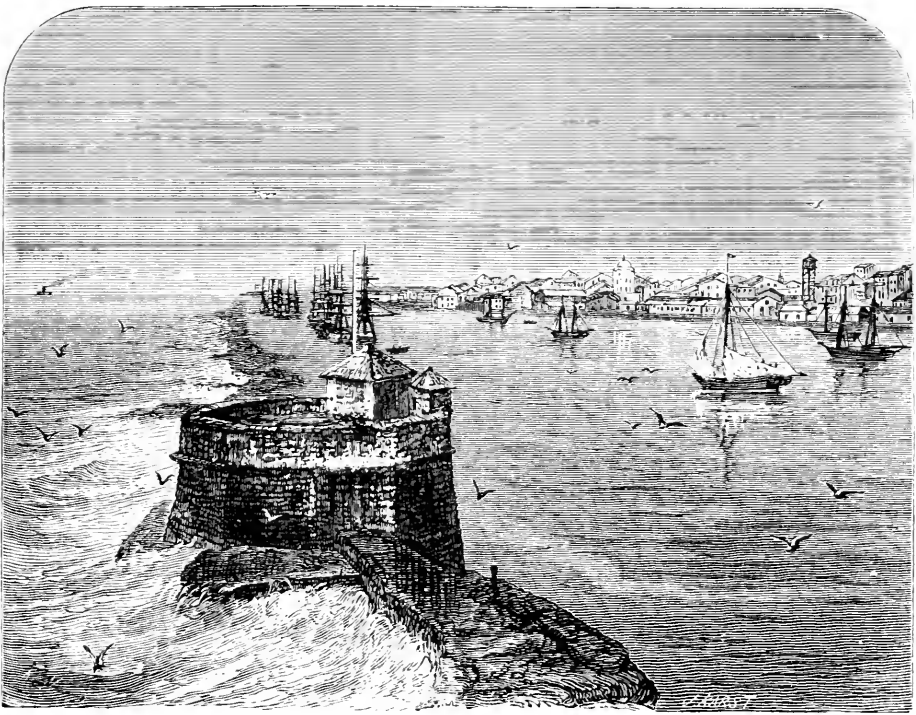
South of Parahyba, the coast country is well watered; secure even from the terrible *seccas*. The fertile land forms a strip, generally about thirty miles wide, and covered, where it has not been cleared, with heavy forest.\* *Pernambuco* owes its prosperity to this forest-region, as well as to its position, almost at the eastern extremity of South America, where Brazil is nearest to the great commercial centres of Europe. Unfortunately, the city has a very indifferent harbor. The commercial portion of the town is fronted by a stone reef, within which schooners and barks of limited draught can pass; but large ocean steamers have to anchor in the roadstead, two or three miles out. Here freight is transferred to lighters, and passengers scramble down the sides to dancing boats, at no small hazard of life and limb. However, we are spared this ordeal; at high tide our little steamer passes behind the reef to the inner anchorage, whence we can reach the shore in two or three minutes.

The reef looks much like an artificial breakwater; from end to end, it forms almost a straight line, and the height is

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\* Hence this region is often distinguished as *mato*, forest, and the peasants who inhabit it are called *matutos*.

very uniform—about ten or twelve feet above high water. At the northern end there is a curious round tower or fort, dating back to the colonial times. Over the reef and against the tower the surf dashes wildly, sending showers of spray to the still water within; when the swell is heavy there is a grand battle here, with great banners of white tossing against



The Reef at Pernambuco.

the sky. Within, the water is always smooth; the narrow space is crowded with vessels, large and small, and the constant movement tells of commercial life and activity.

Pernambuco is made up of two cities. The older portion occupies the end of a long, narrow peninsula, known as *Recife*, the Reef, though the reef proper, as we have seen, is farther out. Between the peninsula and the main-land there is a long creek or bay, the continuation of the harbor. The upper portion of this creek is shallow, but about the end of

the peninsula it is deep enough to float schooners and small barks, which receive and discharge their cargoes at the city wharves. Hence, the exporting and wholesale business is confined to the peninsula and to the opposite shores of the main-land, where the other portion of the city lies. Two or three bridges connect this division with the old town.

Pernambuco commercial life centres about the water-front at Recife, directly opposite the stone reef. Here there is a little open space, which the merchants, with commendable good taste, have left unobstructed. Rows of trees form a shady promenade, and the benches about their roots are favorite lounging-places. The space is not much larger than a good-sized door-yard, but it gives an oddly rural feature to this part of the city; a combination of repose and active business as different as possible from Pará and Rio. Over all there is the dinginess that is common to most water-fronts, brightened here by the handsome building of the Commercial Association at one end of the common.

The streets of Recife are very narrow and very crooked, with houses so high that they almost cut off the light. Many of these buildings are nearly as old as the city itself, dating back to the times of the Dutch occupancy in the seventeenth century. In the more ancient houses there are traces of Dutch or Flemish architecture, and this is still more evident in some of the older churches and monasteries, both in Recife and in the main city. A somewhat more modern cast marks the Portuguese reoccupancy, and from that time a series of changes can be traced, until the ancient forms are lost altogether and the modern Frenchified, no-architecture, takes their place. Of this latter, very little is seen in Recife.

The city's story has left other marks on these old walls.

Some of the houses have loop-holes, opening on the street ; some are pitted with bullet-marks, which tell of the hot street battles of 1845. Perhaps the political wars of these later times have left a deeper impress on the people themselves. Now, as then, they are jealous of the Central Government at Rio ; underlying their love of peace and order, and their steady patriotism, there is a constant feeling of discontent, only half-concealed. They complain, with much reason, that Rio draws all prosperity to herself ; that the northern provinces are taxed to build railroads, public buildings, what not, for the southern provinces ; that the Government will not improve their harbor because it fears a too powerful rival for the metropolis. I do not think that this spirit will ever again break out in open rebellion, but it is doing its silent work. Pernambuco is the better for this lack of government coddling. Her merchants are more enterprising and quick-sighted, her people are more independent, and intelligent, and generous in all public works. Politically, the northern province may never be independent ; but it is achieving its social and commercial independence even now. Time will come when Pernambuco will attend to her own railroads and harbor-walls—and attend to them better and more wisely than the Central Government ever could.

The principal bridge from Recife to the main-land is a modern and handsome one of iron ; passing from the narrow, old-fashioned streets, one is a little astonished to find such a structure, and still more surprised at the utter change from the old to the new city. Beyond the bridge, the streets are wide and straight, with horse-cars, and broad, well-paved sidewalks, and spruce modern houses on either side. Some of the public buildings are remarkably handsome, and they are so placed, about open spaces and on the water-front, that

they have a really imposing effect. Many of the streets and squares would do credit to any northern city.

It is only justice to the Pernambucans to add that the good features of the city are not all on the outside. The market building is finer than any in New York, and the interior arrangement is admirable. The jail is a model of order and neatness, comparing most favorably with other provincial prisons. There is a small but well-selected city library ; the government engineers and surveyors have finely appointed offices, and they do much good work. So far as my own observation goes, the public service of Pernambuco is better than that of any other port of Brazil. There is less political squabbling here, less dishonesty and pilfering, far less mismanagement than at Rio and Pará.

A stranger can hardly fail to draw favorable comparisons between Pernambuco and the southern cities. The Government officers are courteous and ready to bear with the mistakes of a foreigner. If we have occasion to enter a store, we are received with politeness ; prices are reasonable, and, in general, we need have little fear of being cheated. A passer-by will readily give us information about the streets, and even go out of the way to show us our road. In social life we find that frankness and hospitality that characterize all the northern provinces, widely separating their people from those of southern Brazil.

There is a railroad from the city to the beautiful sea-side suburb of *Olinda*. This is an older town even than Recife ; in fact, it was the original metropolis, and it is still the ecclesiastical capital, retaining the cathedral and bishop's residence. There are quaint old houses of the Dutch times ; three or four ancient churches and monasteries are scattered about the green headland, from whence there is a fine view



over the sea, and southward to the city. Along the beach there are modern hotels and cottages and pavilions; the Pernambucans often reside here for weeks together, to enjoy the fresh air and the fine sea-bathing. Every pleasant evening brings crowds of excursionists to Olinda. Ladies and gentlemen stroll about the beach, listening to very good music from the pavilions; convivial parties sit at tables before the hotels; there is much drinking of mild beer and strong coffee and brandy. Altogether, it is a smaller edition of Coney Island or Brighton. As for the bathing, that is almost confined to the early morning; people take their daily plunge, as they would medicine, by the doctor's order, and the baths must never vary from prescribed numbers and times.

We have glimpses of unceremonious country life, during our visits to the sugar-plantations back of the city. To reach these, we take the little *Caxangá* railroad to its terminus, eight or ten miles from the city; there saddle-horses are hired, and we gallop off through an open, rolling country, with small plantations on either side, and thickets of tangled second growth, and strange *barrigudo* palms here and there.\* An hour's ride brings us to the sugar-plantations; some of them are in the rich bottom-lands, but the best are on hill-sides, generally planted in small patches, where the land is fitted for a strong growth. We are on a private road now, which leads through two or three estates, until we reach our destination; a fine, large country-house, with the sugar-mill near by, and negro quarters beyond.

The proprietor—a tall, wiry-looking man, very much like an American in appearance—greet us with bluff cordiality; introductions over, he invites us into the mill-house, where

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\* *Attalea*, sp. ?

we spend an hour in examining the complicated modern machinery. Our host explains the different portions with a little pardonable pride in the establishment, one of the finest of its kind in Brazil. After that, he takes us away to the house, where we are duly presented to the ladies, and made to regale ourselves at a table, which might do for a New England Thanksgiving dinner. Then, no one will hear of our leaving to-night; all our excuses are overruled, and, indeed, we are not loath to improve our acquaintance with the family. The evening is passed, as it might be at an American home, with music and conversation and draught-playing. The ladies—some of them are young, and very pretty too—are unrestrained, except by their own sense of what is right and womanly; in Pernambuco, ladies of the better classes are almost entirely emancipated from the stupid Portuguese customs; if they do not have the freedom of American women, it is because these better families form only a small percentage of the population; and the modern customs, however they may be admired in private circles, are not yet admitted in public.

Our host has a good library of French and Portuguese works, and he is eager for information. In his younger days he travelled in Europe, studying at Coimbra and Paris. Returning to Pernambuco, he married and settled down happily on his fine plantation. Most of the labor here is free. There are about fifteen negroes, but no servants could be better treated, and the master shares the almost universal Pernambucan spirit of hatred to slavery; if he does not free his own people, he steadily refuses to buy more, although he would gain much, materially, by doing so. And this man is not alone; he is one of a small, but rising and influential class of planters, who are worth more to Brazil than all

her theorizing statesmen and grand immigration schemes ; for they are showing her capabilities, by raising the agriculturist to his true level. Such characters do not thrive in the southern provinces, where slavery degrades everything ; but there are some, even there. Here at Pernambuco, they have much in their favor—custom, institutions, public opinion ; above all, the absence of competition from overgrown plantations. So here they thrive, and are likely soon to be a power in the state.

The older method of sugar-making, which is still followed on most of the Pernambuco plantations, is very crude. The cane-juice, first purified with lime, is boiled in large, open evaporators, or in successive iron kettles ; when it has attained the required consistency, it is allowed to cool, and is then ready for the dripping-jars. These jars are about thirty inches deep, and twelve inches in diameter at the top ; the bottom is rounded, so that the jar has something the shape of a Minié-rifle bullet ; it terminates in a hole about three inches in diameter. This hole is closed with a plug of cane-refuse, and the jar is filled with about two hundred pounds of *melada* from the kettles. Frequently three hundred or more jars are set on frames in the sugar-house ; this house has a stone floor, inclined everywhere to a reservoir at the centre, where the drippings of molasses are collected. The jars are allowed to stand for twenty days, after which the plugs are removed, and the molasses which has collected at the bottom is drained away. The result is unclayed or *muscovado* sugar, a very inferior brown grade. If finer grades are required, the contents of the jar, after this first draining, are thoroughly stirred, and covered with cakes of wet clay ; water, in small quantities, is poured over the clay ; it percolates through the jar slowly, washing the sugar and

carrying away the molasses beneath. After two weeks, the sugar is removed in successive layers, those at the top being nearly white, while those beneath are successively of inferior quality to the bottom of the jar. The difference of quality may be seen in the market prices ; for example, in December, 1878, the highest grades of clayed sugars were sold in Pernambuco for about 4,500 reis\* per fifteen kilograms ; while the lower grades brought no more than 1,600 reis.† The white upper layers are generally shipped to Rio and Lisbon, where they take the place of refined sugar ; the lower qualities go to the United States and England, and are improved by refining, as required.

The modern process, employed by our host at the São Francisco plantation, is far more complicated. Steam engines are used here. Cane-juice from the ponderous iron cane-mills is pumped into a reservoir, where it is purified with lime and carefully strained. Thence it is passed to evaporating-pans and boiled for three hours, until it is reduced to a pretty thick syrup. Now it is run into the vacuum-pans, and boiled, under a reduced pressure and at a low heat, for eight or ten hours longer. This process leaves the sugar well crystallized, but mixed with molasses. The sticky mass from the evaporating-pans is placed in centrifugal wheels, cylinders two feet in diameter, the sides of which are closely perforated with minute holes, like a strainer. The wheels are made to revolve at the rate of fifteen hundred to eighteen hundred times per minute ; this rapid motion throws the sugar against the sides, and the molasses flies off through the holes. A jet of water, and subsequently one of steam, are turned into the wheel, and

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\* At par value, \$2.25.

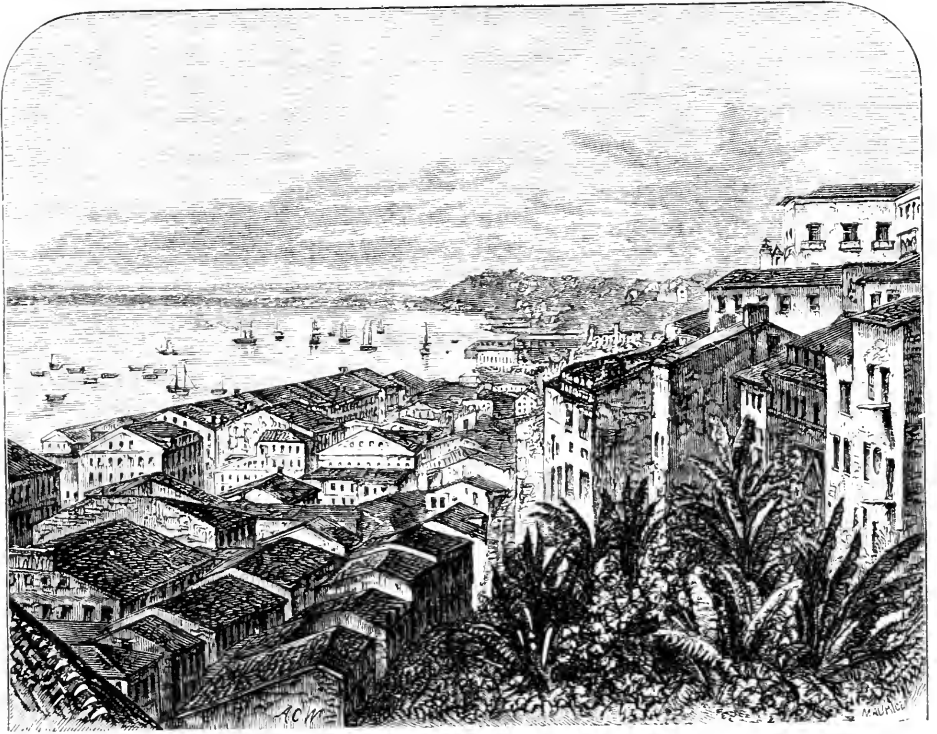
† Eighty cents.

the sugar is thus washed until it becomes perfectly white. Two or three minutes suffice for the whole process ; the sugar is taken out, dried in the sun, and pulverized in a small machine. The molasses from the wheels is reboiled, yielding a high grade of brown sugar ; the second molasses is sold to distillers, by whom it is made into rum. The fine white sugar produced at São Francisco is, in fact, of a refined grade ; sent to the United States or Europe, it is liable to the heavy duty imposed on refined sugars generally. Our refiners, of course, are anxious to have this duty retained, because without it the centrifugal sugar is likely to ruin their industry. The planters, on the other hand, favor duties founded on the actual amount of saccharine matter in the sugar, without reference to its color. This is, in fact, another phase of the endless dispute between "protection" and "free trade ;" a dispute which will last as long as custom-houses do. It may mean very little to you or me, but to our host at São Francisco it is a question of paramount importance. At present he can dispose of his refined sugar to city customers, but as other improved mills spring up, this local demand will be over-supplied, and the sugar will have to be sold at a reduced price.

The commercial importance of Pernambuco depends largely on the sugar industry. All day you may see trains of horses coming down to Recife, each with two sacks of sugar slung from its back, a sticky mass. In the warehouses, negro porters are employed to carry the sacks (each containing one hundred and sixty-six pounds) on their heads. They work naked to the waist, the perspiration and molasses mingling in little streams on their shoulders. Great mounds of sugar are formed in the storehouses, over which the porters climb, until a squeamish man is ready to abjure sugar

for the rest of his life. It must be remembered, however, that most of this mass is cleansed and refined before it reaches the consumer.

From Pernambuco to *Bahia*, the coast-line becomes more irregular and picturesque. After passing the mouth of the São Francisco, hills begin to appear ; the land is higher, and



Bahia, from the Hill.

there are little bays and head-lands, taking the place of the monotonous sand-beaches which extend from Maranhão to Pernambuco.

The harbor of Bahia is only inferior to that of Rio. It is very extensive, deep enough for the largest steamers, and the entrance is wide and unobstructed. On either side there are low hills, with green woods and meadows, and curious buildings and forts here and there. The city itself is on the eastern side of the bay, near the entrance ; the main business

portion is built on the ground, by the water-side ; the rest of the town is on a bluff, three or four hundred feet above the bay.

Of all Brazilian cities this is the most picturesque. In the lower town the streets are narrow, with antiquated buildings, dating back to the sixteenth century, and covered with the mould of years. Lazy negroes lounge at every corner ; fruit-women, with gayly-colored shawls over their shoulders, nod in the sun before their heaped-up trays ; queer little plodding donkeys and horses jostle each other at the turnings ; porters with sedan-chairs pass through the streets at a dog-trot ; everywhere there is an atmosphere of antiquity and repose. The upper town is less ancient, but the preponderance of negro figures, and their odd costumes, seen to perfection here, give the place a character of its own. The upper and lower towns are connected by a ponderous steam-elevator, from the top of which there is a magnificent view over the bay.

Bahia exports large quantities of tobacco and sugar, with hides, cotton, a little coffee, and not a few diamonds. The city has monopolized the tobacco-trade of Brazil ; everywhere, through the streets of the lower town, there are cigar manufactories, which send their products to all parts of the empire ; large quantities of cigars, also, are sent to Europe ; and it is said that not a few find their way to the United States, where they are sold as "pure Havanas" or "Key West cigars." The Bahia tobacco is much inferior to that of Cuba. Many Brazilians buy imported cigars, and there is a steady trade in this product, between Rio and the West Indies.

Bahia was the first capital of Brazil, and, until the coffee-trade sprang up, it shared the commercial supremacy with

Rio. Even now, it is the second city of the empire, both in size and importance; and with its fine harbor, it may yet regain what it has lost. But its people are far inferior to those of Pernambuco; a large proportion of the population consists of negroes, slaves or free, and always ignorant and lazy; the whites, too, are less frank and manly, more like their cousins of Rio and São Paulo. So I look for a stronger and more healthy growth in Pernambuco than in Bahia, notwithstanding the great natural advantages of the latter.

From Bahia to Rio de Janeiro, the hills increase in height constantly, until they are merged into the rugged mountains



Victoria Harbor.

of the Coast-Range. Now there are strange peaks, and needles, and rock-masses rising straight up from the sea, a grand panorama. We do not always run near the shore, for there are dangerous reefs in this region, and much caution is required in passing them. The coasting steamers touch at three or four points; the last station north of Rio is *Victoria*, a queer little rock-bound harbor, so narrow that our ship, swinging around with the tide, almost cuts it in two.

So at length we steam down from Cape Frio to the sugar-loaf, and pass into the magnificent bay of Rio de Janeiro.



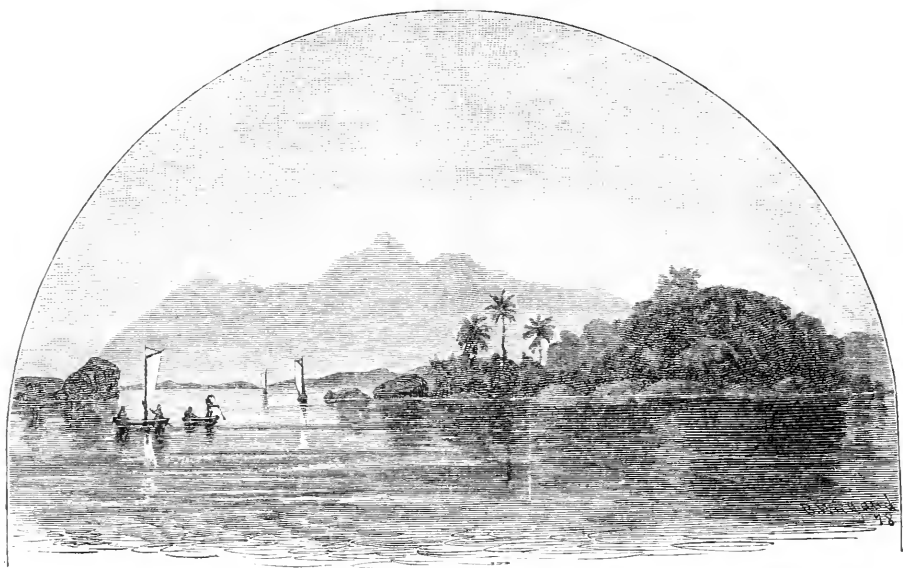
## CHAPTER XV.

### SOCIAL LIFE AT RIO.

THERE is nothing more difficult in authorship, than for a writer of one nation to judge fairly of the people of another. He must not measure them by his own experience; he may have been well or ill-treated, as he has encountered good or bad individuals, or as circumstances have placed him in a favorable or unfavorable light with those whom he has met. He must not judge by customs; what is distasteful to him may be entirely right in the eyes of another man. Finally, he must not judge of a great nation by a single city or community, for people who speak the same language and obey the same laws may be entirely opposed in character.

Heretofore, our wanderings have generally been in the backwoods of Brazil, where we met with simple-hearted country-people, whose goodness was rather negative than active. In Ceará and at Pernambuco we encountered a class of Brazilians who were above the average of their countrymen. In studying the people of Rio de Janeiro, we shall find a great many unpleasant traits of character, and some very good ones. Now, if I appear contradictory, let it be remembered that I am trying to view the Brazilian character from all sides; to judge fairly by the whole, and

not by particular or individual traits. Sometimes the mountains back of Rio de Janeiro are covered with clouds around their base, while single peaks above glow like diamonds in the sunshine. I could not judge of the mountains by the gilded peaks, nor yet by the dark clouds, for in either case I might be entirely wrong; I must climb the peaks to see that they are formed of rocks, and not of sunshine alone; I



Tijuca, from the Bay.

must go into the mist, though it be dark and drizzling there, to find the beauties that underlie it.

The metaphor is good for nothing of a bright morning, when one crosses the bay from São Domingos and sees the city lying there in the sunshine. For Rio is a picturesque place; it must be so from its surroundings; even the odd jumble of ancient and modern buildings seems to have a certain fitness under the other odd jumble of crooked mountains. Within the city limits, there are lesser hills and rocks; some of them have convents or churches on them, and irreg-

ular clusters of houses. Back on the mountain-sides, the streets climb as far as they can, and end nowhere.

The little ferry-boat lands us in our city of metaphorical fog and actual sunshine ; sunshine a trifle too warm, even at this early hour ; but you must expect all sorts of weather at Rio. So we put up our umbrellas, and walk over to the *Rua Primeiro de Março*.\*

There is nothing essentially tropical about this part of the city, unless it be the tile-roofs, and the hintings of early Portuguese - Brazilian architecture. That square edifice, on our left, is the department of Agriculture and Public



Rua Primeiro de Março.

Works ; it is one of the few Government buildings that show something like artistic taste. Brazilian architecture, just now, is in a transition state, characterized by nothing but tawdriness, and a poor attempt to imitate the French. I

\* Formerly the Rua Direita. The Government has shown its taste by abolishing the old and well-established names, and substituting new ones, founded on national history, and supposed to fill the soul with patriotic emotions ; as if we should call Broadway " Fourth of July street," or the Bowery " Avenue of the Battle of Bunker Hill." But the people rebel, and stick to the old names.

like better the old buildings, which are plain enough, but have a character of their own.

On the street-corners, there are gayly-painted and decorated, pagoda-like buildings—*kiosques*, they are called here. Groups of laborers are gathered about them ; they buy their coffee and lunch at the kiosques, and discuss the probabilities of lottery tickets that are exhibited in the windows ; invest their savings in the tickets very often. These lotteries are a curse to all classes in Brazil.

The Rua Primeiro de Março is wide and pleasant ; there are two or three churches, of uncertain architecture ; \* farther on, the new Post-office, much more showy but far less artistic than the Agricultural Building. For the rest, there are rows of warehouses and offices, buildings three or four stories high, and very plainly finished. This street is, perhaps, the most bustling and business-like of any in Rio ; yet nobody appears to be in a hurry, unless it be some newly-landed-foreigner. Only a few carts and carriages are seen ; negro porters carry burdens on their heads. There are street-railroads, the cars drawn by mules ; frequently we see platform-cars, loaded with bags of coffee or grain.

This is one of the principal wholesale streets. Farther back from the bay are the retail shops ; the best of them on the fashionable *Rua do Ouvidor*, which would be unfashionable enough in New York, for it is a mere narrow alley, like most of those in this part of the city. However, the shop-windows are very tastily arranged ; Brazilians understand this art thoroughly. There are coffee-rooms, opening to the street, and two or three picture galleries with execrable

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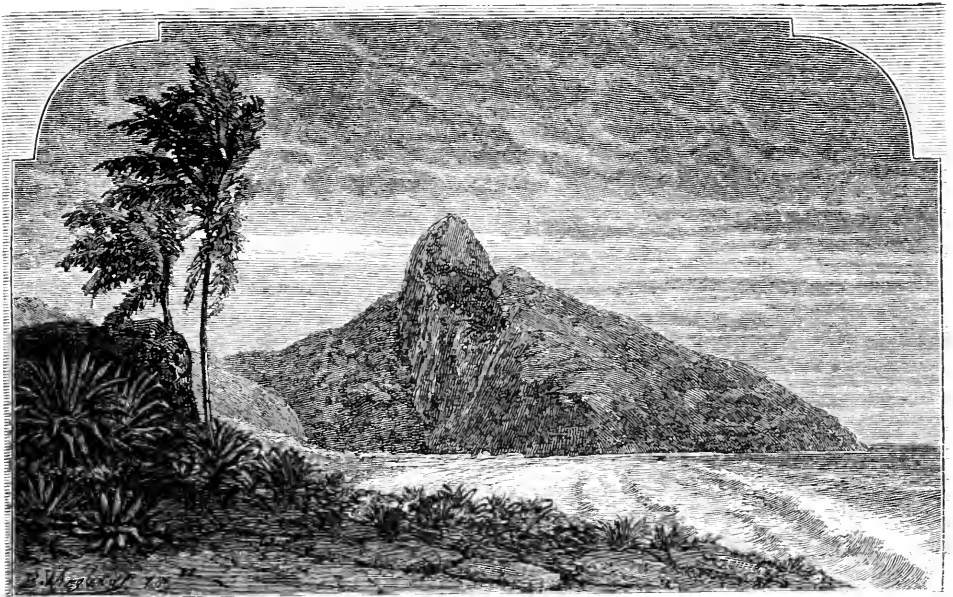
\* Those shown in the foreground of the picture, are the Imperial Chapel, commenced by the Benedictine Brothers in 1761, but only completed during the early part of the present century ; and the *Igreja do Carmo*, built from 1755 to 1770.

paintings. On the whole, the Ouvidor is lively and pleasant; of an evening it is brilliant, and the broadcloth-coated gentry come out in their glory. During carnival time, and periods of public rejoicing, the arches of gas-jets overhead are all lighted, and the street is crowded for half the night; people saunter indifferently on the sidewalks or in the roadway.

Turning off from the Ouvidor, we can stroll through the northern part of the city, where the docks and great warehouses lie. The streets are narrow, for the most part, and not over-clean. Here, during the sickly season, the yellow fever gathers in its victims by scores. It begins, generally, with the boatmen; one often hears of deaths in December and January; in March and April, when the weather is warm and oppressive, the disease is at its height, and has spread over the whole city. Foreigners, from northern countries, are especially liable to its attacks; almost every year some prominent American or Englishman is carried off. From June or July until January, one need not fear the yellow fever in Brazil, unless it be, rarely, in Pará. In truth, if sanitary regulations were properly enforced, the disease would never appear here at all. Rio, by its situation in a rocky basin, is most subject to it; but the real cause is the slovenly condition of the streets, and the imperfect sewerage. There have been schemes enough for cleaning and draining the city, but they have either ended in vapor, or, being mixed up with political jobbery, have been only half carried out.

Yet our narrow and dirty streets are not without their picturesque side. The older buildings are here; some of them date back two centuries, and exhibit, in perfection, the peculiarities of the earlier colonial times. Our American

historic houses were mostly of wood, and have disappeared long ago, or only exist in a half-ruined state. The Portuguese colonists built solidly of stone and cement, in the manner of the mother country ; and after two hundred years the walls and tile-roofs are as good as ever ; only the whitewash has been softened down with black mould, until every tower and cornice is a delight to the eye. A wonderful beautifier is this mould, and wonderfully well it has done its work



The Sugar-loaf, from the West.

here ; that old convent on the hill is a picture like an artist's dream. Strangely in contrast are the modern dresses, and the horse-cars that pass through nearly every street. The low trucks and half-naked negro coffee-carriers are more in keeping with these mouldy walls, albeit the buildings speak rather of repose than of active commercial life. We see a most modern-looking coffee-packing establishment, on the ground floor of what might have been a viceroy's palace, or a colonial prison. It is like the meeting of two centuries.

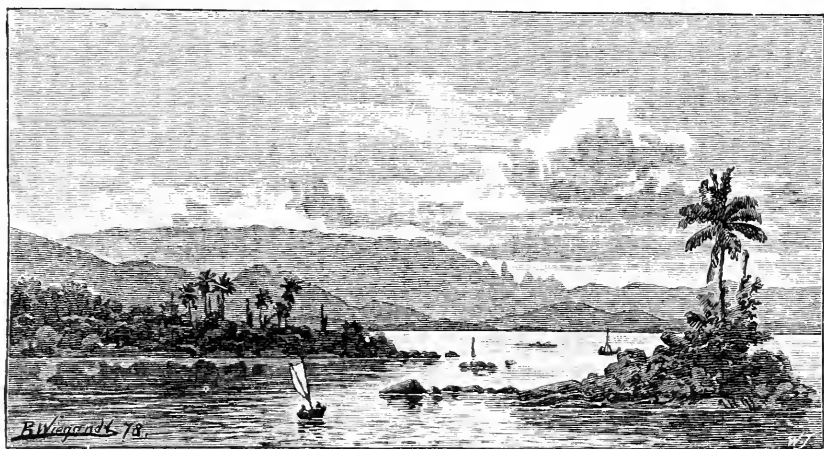
Farther on, there are the Pedro Segundo docks, where all except very heavy draught ships can take in cargo directly from the wharf. These docks, lately finished, have become exceedingly popular with shippers. They are handsomely ornamented, perhaps with a tendency to extravagance, as with all public works in Brazil.

Beyond, the waters of the bay ripple and dance in the sunshine. What a glorious harbor it is! It has been pictured and praised ever since it was discovered, and it will be, while ships and commerce last. Its acknowledged rivals, San Francisco and Constantinople, can never boast of greater natural advantages than these; a clear approach, an unobstructed entrance, wide enough, but not too wide, and fifty square miles of anchorage ground within; more, for light draught vessels. Not a tenth part of the space is used now, and ships have room enough and to spare.

I have been with matter-of-fact men, phlegmatic ones, who grew enthusiastic when they passed the sentinel Sugar-loaf rock, and saw this splendid bay for the first time. It is not alone the mountains; those are strange and grand, rather than beautiful; but the rocky points, the picturesque side-bays, the green hills and islands, the by-places and glens. Away, beyond the city, the blue water stretches almost to the base of the Organ mountains—land of purple romance, where the jagged rocks are all mellowed and dissolved in the soft haze, and you see nothing but the outlines, with the finger-like *Dedo de Deus* at one end of the range. Some of these peaks are six thousand feet high.

Rocks on either side; not insignificant matters either. There is the conical Sugar-loaf at the entrance of the bay—a mass twelve hundred feet high. Beyond the city is a huge cluster, with the *Corcovado* and *Tijuca* rising above it;

farther back, the *Gavea* and *Tres Irmãos*; across the bay, other clusters, not so high, but everywhere with abrupt hills and precipices of the purple-brown gneiss. Even the water is not free from these peaks; there are rocky islands here and there, and some of them are crowned with buildings,



The Organ Mountains.

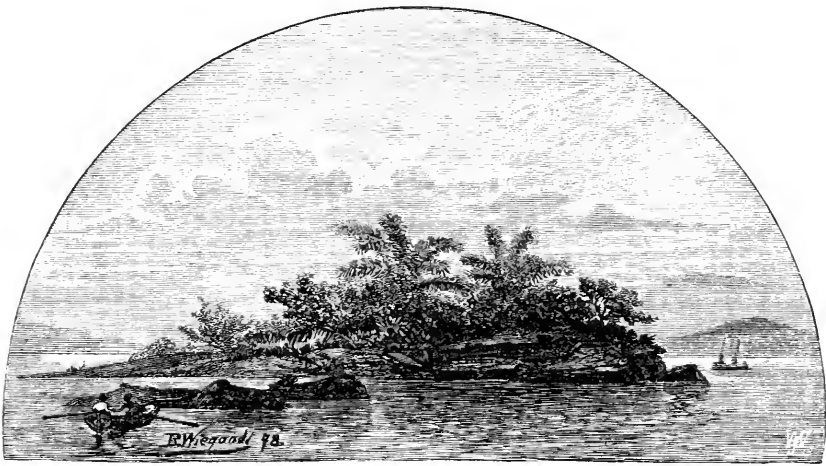
forts, naval storehouses, convents. The old monks must have chosen these sites for picturesque effect.

There is no end to the beauties of this bay. You go sailing along the shores, and every headland and nook is a delight, with nodding palms and flowering shrubs. Then there is the shipping: how artist Turner would have delighted in it! Ships are picturesque everywhere, but in Rio harbor they are supremely so. I know not if it be the limpid water, or the background of hazy mountains, or an indescribable something in the air; but there are no other ships like these; not even on the Hudson, where the sloops and schooners are all enchanted. There are monitors—expensive toys of the Brazilian Government, which does not need them at all—and gunboats, and war-steamers; English ships, French, Portuguese, German; rarely, one that carries the American flag,



though many belong to American merchants, and are commanded by American masters.

To return to the city. Rio is a great, sprawling, shapeless place; the main business part is pretty compact, but beyond, there are spider-like prolongations along the shores on either side, and back among the picturesque valleys to the very feet of Corcovado and Tijuca. Perhaps the prettiest of these suburbs is *Botafogo*. It is built along the shores of



Up the Bay.

one of those picturesque side-bays that open into the harbor of Rio; a placid stretch of clear water, with rocky headlands here and there, and a broad sand-beach, and the Sugar-loaf rock in the background. Some years ago, an enterprising American conceived the idea of uniting this place to the Ouvidor, by a street-railroad. At that time, people who could not afford a carriage of their own, must ride in dirty, crowded omnibuses, or go on foot, as the most of them did. The Yankee idea was received with favor and opposition, in about equal measure; however, it was carried out, and now the Botafogo line is probably the finest of its kind in the world; the stock three or four hundred per cent.

above par, and not to be had at that.\* Since this one was built, street-railroads have risen in favor ; many other lines are in operation, but none so successful as the first.

In Botafogo, nearly all the houses are of the better class ; some of them not without beauty, though the architecture is sufficiently confusing. But the glory of the place is its crown of gardens : stately, tropical gardens, with avenues of royal palms, and gorgeous flowering shrubs, and dark-tinted trees, like hedges for denseness. As you look at them, you get, somehow, an odd idea that all the leaves have been varnished ; yet the impression takes nothing from their beauty. A dark-haired, splendid, tropical belle is Botafogo, reclining there under the Corcovado, and gazing at herself in the quiet waters of the bay.

But it matters little to our purpose what the oft-described houses and gardens are ; we must know something of the people who live in them.

Not unpleasant people to visit with, you may be sure ; only you must have the *entrée*, for Rio society is very exclusive. Most foreigners never see the inner life of Rio at all. or what they do see, in glimpses, is too good or too bad for a correct index ; so Brazilians get praised or get blamed, without any great justice in either case.

Here, as everywhere else, it takes all sorts of people to make up a community. Only, in Brazil, the proportion of really good families, refined, educated ones, is very much smaller than in the United States : too small, as yet, to exercise much influence over the country. When you meet

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\* The road was economically built, and it is carried on with true Yankee acumen. For instance, the car-mules are young animals, brought in from the country and broken to work by the company itself ; after a few months, they are sold at a profit, for carriage-mules.

with these families you find a social life differing very little from that to which we are accustomed at home ; pure manners, intelligent conversation, and a hearty respect for every true lady. The ladies themselves are quick-witted, lively, brilliant ; one of them would flash all over a northern drawing-room, to the utter extinction of dull conversation.

But the mass of Rio society is much lower ; it is a bad imitation of the Parisian. I think, indeed, that there is a deal of unconscious truth in the boastful title which the people have given to their city—"Paris in America." French fashions, French literature, French philosophy, French morals, are spread broadcast through the educated circles ; only you must remember, that all this is modified by strong class distinctions, which the French have got rid of, and by the influence of old, bigoted Portuguese ideas.

Ladies go about with their husbands and fathers, and are always treated with politeness ; they are witty and lively, but often superficial. The time is past when women were shut up like nuns, behind latticed windows, invisible to the street ; when they were only shown at balls and on state occasions. But true social freedom is hardly more accorded to them than it was a hundred years ago. If the custom of betrothing children has gone by, it is still true that a woman has very little choice in her own disposal. The majority of girls, I suppose, accede blindly to their fathers' wishes, taking the husbands that are offered to them, as a matter of course ; and glad of any change to relieve the monotony of their life. There may be a previous understanding between the young people, but society does not recognize that ; until she is married, a woman's fate rests with her father or guardian ; the mother has very little to say about it.

The same surveillance is seen in every-day life. A girl,

if she goes out at all, walks the street with a black servant at her heels ; ladies sometimes venture on shopping excursions, but, for the most part, they buy from samples that are sent to them, or from one of the numerous tribe of street-peddlers. You may see these latter at any time, passing from house to house, with their glass boxes of small goods on their backs, or in a cart ; sometimes, if they are well-to-do, they have a negro to carry their box for them. They do a very thriving business.

Altogether, social life at Rio is in a most chaotic condition, and it is not likely to mend greatly at present. What can we expect where marriage is looked upon as a matter of convenience only, and woman is a grown-up child, a creature to be guarded and restrained ? I have no patience with them, these absurd rules that have come down from the dark ages, and rooted themselves in a civilized community, to turn it black like themselves ! No man, in his heart, will be faithful to an inferior ; no woman restrained, but will sigh for freedom. Go your way, my fine gentleman ; lock your doll in her parlor ; and return to find a woman with the womanhood driven out of her ; a creature stealthy, subtle, quick to betray you as you have betrayed her. You say that she needs education, to fit her for liberty. She needs liberty, to fit her for education ; and she needs a true heart to make them both avail her.

I wish I could speak better of the place, but I know of no other city where vice is so brazen-faced, so repulsively prominent, as at Rio. You must not judge the whole by what you see ; there are many good men, even here ; there is pure society, with happy home circles in it ; there are men and women who come together as God meant they should, and respect each other, and go on to the white-haired ending,

hand in hand, with comfort and cheer. Nor must you judge other Brazilian cities by Rio, for this is a centre of wickedness, as all capital cities are ; Pernambuco, for instance, is immensely better. In truth, almost any other place in Brazil will compare favorably with the metropolis in private morals.

But family life at Rio has another, and a brighter side. It is what one sees with all the Latin nations ; the affection that is wanting between man and wife is lavished by both upon the children ; and then, when the boys and girls are grown, the debt is repaid tenfold with dutiful care and loving attention. We, too, have a lesson to learn ; we, who so often let our fathers and mothers go down to a sterile, loveless old age, living with us by sufferance, shoved away with other household rubbish when they may be. I can almost forgive a Brazilian for his social mud, when I see his pride and joy over the white-haired father. Careful, loving arms guide the old man to his seat in the evening sunshine ; quick, youthful feet are ready for his every want ; and then the younger children come in for his blessing, and kiss his hand ; strangers are brought to pay their respects to him, as he sits there in his halo of patriarchal glory.

So far, we have been considering only that portion of the population which would be distinguished as the "society" of Rio ; people who, by birth, or education, or wealth, are able to retain a certain standing, which separates them from the mass of their countrymen. Classes are strongly marked in Brazil. Below this "society" stratum, we may distinguish three others, pretty sharply defined : the mechanics and small shop-keepers, the laborers and peasants, and the slaves.

In the United States we have nothing precisely parallel to the second Brazilian class ; perhaps our poorer Jews are the best comparison, but they are hardly an integral part of the

nation. In Brazil, the importance of the second class is very much underrated, simply because official statistics do not recognize it, as a class, at all. In it we may include pedlars, shop-keepers in the smallest way, low eating-house keepers, and finally, every mechanic who does any honest work ; for mind you, in Brazil a mechanic is no more ad-



Porters waiting for Work.

mitted into society than a boot-black would be at home. These men are mostly Portuguese immigrants ; sometimes white or half-breed Brazilians. They work hard to keep themselves above the common laborers, whom they look down on ; they never aspire to the magnificence of the privileged class, the educated ones, who look down on them, or rather ignore

them, except as they must make use of their services. With this lower stratum, education never extends beyond writing and accounts, but even that is enough to secure the respect of *sans culottes*, who, very often, cannot even read. Then there is the added dignity of proprietorship ; the owner of a street-corner pagoda, who sells coffee and lottery tickets at his windows, is a superior being to the porter or boatman,

or even to the cartman, who may get his morning lunch there.

Rather a negative element is the stratum next below this—the free laborers. In this class I may include, not only the porters and cartmen and marketmen of Rio and the other cities, but all the peasantry of Brazil, whether the *matuto* of Pernambuco, or the Arab-like *sertanejo* vagabond of Ceará, or the Indian of the Amazons; stationary people, who work only when they must, and never accumulate property. This negative class must exist in every country; only individuals can climb out of it, and make men of themselves.

In Rio, this class includes Portuguese and free negroes; the latter, probably, the more intelligent and honest. There are boatmen and cartmen, porters waiting for a job at every street-corner, hawkers of fish and fruit and poultry; thousands who have no regular employment, but pick up their living by doing “odd jobs.” Our boot-blacks, and news-boys, and street-Arabs generally, might belong to this class; the “long-shoremen” are a grade above it. Certainly, the Rio vagabonds are lower, both in intelligence and morals, than the Amazonian Indians; and for cleanliness, the Indian is infinitely superior.

So we come to the fourth and lowest classes in Brazil—the slaves. The class that originated in barbarism and selfishness—the class which Brazil, for very shame, is trying to get rid of, but whose influence will curse the children with the sins of their fathers for dreary years. I tell you, be they inspiration or revelation, or only bare philosophy, those words of Sinai are true with God’s truth and justice; you cannot undo a wrong that is done; it must work itself out to the bitter ending, and you or yours, or blameless people on the other side of the world, will have to pay for your compact

with Sin. We are paying ourselves for this hideous crime of slavery, as we paid for it during four years of hideous war ; body and soul, we are all of us paying other people's debts. If there is no clearing-house fiat ahead of us—there ought to be.

I came to Brazil, with an honest desire to study this question of slavery in a spirit of fairness, without running to emotional extremes. Now, after four years, I am convinced that all other evils with which the country is cursed, taken together, will not compare with this one ; I could almost say that all other evils have arisen from it, or been strengthened by it. And yet, I cannot unduly blame men who have inherited the curse, and had no part in the making of it. I can honor masters who treat their slaves kindly, albeit they are owners of stolen property.

In mere animal matters, of food and clothing, no doubt many of the negroes are better off than they were in Africa ; no doubt, also, they have learned some lessons of peace and civility ; even a groping outline of Christianity. But it would be hard to prove that the plantation slave, dependent, like a child, on his master, and utterly unused to thinking for himself, is better, mentally, than the savage who has his faculties sharpened by continual battling with the savage nature around him. Slavery is weakening to the brain ; the slave is worse material for civilization than the savage is, and worse still with every generation of slavery.

That is not the main evil, however. The harm that slavery has done to the black race is as nothing to the evils it has heaped upon the white one, the masters. If every slave and free negro could be carried away to Africa, if every drop of cursed mixed blood could be divided, the evils would be there yet, and go down to the children's children with a blight upon humanity.



Indolence and pride and sensuality and selfishness, these are the outgrowths of slavery that have enslaved the slave-makers and their children. Do you imagine that they are all rich men's sons, these daintily-clad, delicate young men on the *Ouvidor*? The most of them are poor, but they will lead their vegetable lives, God knows how, parasites on their friends, or on the government, or on the tailor and grocer, because they will not soil their hands with tools. "Laborers!" cries Brazil. "We must have labor!" and where will she get honest workmen, if honest work is a degradation? Slavery has made it so. For generations the upper classes had no work to do, and they came to look upon it as the part of an inferior race. So they have kept their hands folded, and the muscle has gone from their bones, and indolence has become a part of their nature. Still, they will be sham lords, if they cannot be real ones; so their money—what they have of it—goes for broadcloth coats and silk hats, and sensuality; a grade below that, they are yet shabby-gentle figures, with an eye to friendly invitations to dinner; and below that, they sink out of sight altogether, from mere inanition.

The rich men's sons are not parasites; sharp enough, many of them are, to keep the money they have, and double it. But from their cradle, the curse of slavery is on them. The black nurse is an inferior, and the child knows it, and tyrannizes over her as only a child can. The mother is an inferior, by her social station, and she does not often venture to thwart the child. The father, with whom authority rests, shirks it back on the irresponsible ones, who may not venture to lay sacrilegious hands on the heir of power. The amount of it is, that a child's training here consists in letting it have its own way as much as possible; and the small

naughtinesses and prides develop into consuming vanity and haughtiness. It is characteristic of the Brazilians, this vanity ; it may come out in snobbism, or over-confidence, or merely a fiery sensitiveness ; but there it is plainly, in the best of them. Slavery is to blame for it ; black slavery, and woman slavery that gives the mother no authority.

Of the sensuality that comes from slavery, the mixed races that overrun Brazil are a sufficient witness, as they are in our Southern States. But in Brazil, the proportion of these mixed races is vastly greater ; I am safe in saying that not a third of the population is pure-blooded ; social distinctions of color are never very finely drawn, though they are by no means abolished, as some writers would have us believe.

People who talk of “amalgamation,” as a blessing to be hoped for, should study its effects here, where it is almost an accomplished fact. The mixed races are invariably bad ; they seem to combine all the worst characteristics of the two parent stocks, with none of the good ones ; and the evil is most apparent where the “amalgamation” is most complete. A light mulatto, or an almost black one, may be a very decent kind of a fellow ; but the brown half-and-half is nearly always lazy and stupid and vain. So with the whites and Indians, or the Indians and blacks ; the *mamelucos* are treacherous, and passionate, and indolent ; the *mestiços* are worse yet ; but a dash of mixed blood may not spoil the man that has it.

The treatment of slaves in Brazil depends, of course, on the master ; largely, too, on the district. In the provinces north of the São Francisco, I am bound to say that they are treated with great kindness ; on the Amazons, they would be, from necessity, if not from choice, for every ill-used

slave would run off to the woods, as many have done, out of mere laziness; freedom, considered abstractly, is not likely to have much influence on the negro mind. But around Rio and Bahia, where the vast majority of the slaves are now owned, there are masters who treat their servants with a severity that is nothing short of barbarism. We shall see something of this, when we come to study the coffee-plantations.

Yet Brazil should have a certain credit above other slave-holding countries, present and past; for she alone has voluntarily set herself to getting rid of her shame. Other nations



Plantation Slaves.

have done it by revolutions, or because they were forced to by a stronger power, or because the system died out of itself. But Brazil, among all, has had nerve to cut away the sore flesh with her own hand; to cut it away while it was yet strong, while it seemed her best vitality. Would to God that she could cut away the scar as well! But the scar will be there, long after emancipation has done its work.

By the present law, slavery will cease to exist in 1892; essentially, I think, the northern provinces will free their slaves before that time. At Pernambuco, especially, the

emancipation-spirit is very strong ; it has come out in the form of an abolition society, which embraces nearly every prominent man in the place ; many slaves have been freed by subscription, at the meetings of this society ; there, and elsewhere, the masters frequently celebrate days of public rejoicing, by releasing some old servant. Sometimes a rich man frees his entire household, by testament.

The slaves have been drained into the southern provinces for years. It is common to find three or four hundred of them on the Rio coffee-plantations ; rarely, there will be as many score on the sugar-estates of Pernambuco or Pará. Now mark the result. At Rio there is a constant cry for workmen ; the slaves are not sufficient, yet free laborers cannot compete with the forced ones ; the planters work their negroes as they would never work their mules, yet complain that they reap no profits. In the northern provinces, there is free labor, enough and to spare ; poor men have a chance in the world ; rich ones are content with the fair returns that their money brings them ; society is far more evenly balanced, and the level of private character is far higher than in the south. Of course, there are humane masters at Rio also ; the city, in this instance, is better than the country around. Many of the negro porters are slaves ; great, brawny fellows, who run in gangs through the streets, each one with a hundred and thirty pounds of coffee on his head. Sometimes we see five or six of them, trotting together, with a piano ; the weight evenly distributed on the woolly craniums ; the men erect, moving in time to the leader's rattle, and to a plaintive chant. The porters pay their masters a certain sum per day ; what they earn over this, is their own. The best of them sometimes buy their freedom from their savings.

Above the four classes which constitute the nation, we might place a fifth—the aristocracy. But Brazilian titles, except for the imperial family, are not hereditary, and the nobility grades insensibly into the society class.

Walking on the Ouvidor, of a pleasant morning, we sometimes get a glimpse of royalty, in its only South American representative. Men stand at the street-corners, and shopkeepers look out at their doors. With a rattle of wheels and a clatter of hoofs, a carriage sweeps by, followed by a score of mounted guards. We see bright trappings, and sleek liveries, and, in the midst of all, a handsome, white-bearded gentleman, seated bare-headed in the carriage. Except on fête-days, or at palace receptions, that is all that the Rio crowd, or you and I, see of Dom Pedro d'Alcantara, Constitutional Emperor and Perpetual Defender of Brazil.

Americans have formed their own opinions of the Brazilian emperor; correct opinions, in the main, for he is at home, what he was in the United States: a thorough gentleman, not at all assuming, but with just enough of pride and reserve to give him dignity in his office; a quiet, scholarly man, who can converse well on almost any subject, from music to palæontology. He visits schools and hospitals about the city; occasionally, makes a flying trip to the provinces, where he is received with expensive outbursts of public rejoicing, and is fêted and eulogized and bored, as royal personages are, the world over. The emperor does not multiply these visits; he is content to shine nearer home. Above all, he likes to take part in the proceedings of scientific societies and art-clubs; with his encyclopedic knowledge, he can enter into a debate at a moment's notice.

But he is not a Napoleon, this emperor; he is simply a well-meaning, well-informed nobleman, who has the good of

his country at heart, but is not always strong enough to force the benefits he would gladly give. He could study our school system, and charm every one by his intelligent questions; but we cannot see that the Brazilian schools are greatly the gainers. He could study yellow fever and its preventives at New Orleans, but there are the dirty, ill-smelling, badly-drained streets, the same pestilence-breeders that they were a year ago.

From his position, I think, the emperor cannot always see the real faults and needs of Brazil, he sees only the best side of things, just as you see the best side of a prison or an asylum that you may inspect; go there as an inmate, and you may tell another story. His Majesty may visit one of the public institutions on a set day; his faithful subjects set the carpenters and whitewashers at work on the building, and the tailors prepare broadcloth coats for the occasion; His Majesty's faithful institution is ready for His Majesty's inspection; and majesty is bowed to, and shown around, and humbugged into a very majestic idea of a very mean little affair. That is the misfortune of hereditary royalty; to see everything in its Sunday clothes. There is another misfortune. The people look at things from their own point of view, and blame royalty where they should pity it. So royalty and the people are forever falling out, because they cannot understand each other.

However, his German and Latin ancestors have bequeathed to Dom Pedro a large fund of good-nature and common-sense; adaptability, is the better word. His father had nothing of this adaptability; so got into trouble with his congress, and was forced to abdicate. Perhaps the Brazilians took a lesson from those stormy times; at any rate, the present emperor has held his position, peaceably in the

main, for thirty-eight years.\* There are those who murmur for a republic (they do not know that a republican government is precisely the most difficult to carry on); but the people in general are content to let their patriotism evaporate in minor politics; they have a reasonably good monarch, and they prefer him to the chances of an actively bad one. There are not wanting those who predict a revolution, to come when the present emperor dies. I think that will depend much on the time of his death; whether it be in a period of political peace, or after a day of storm.

In general, the emperor's influence is felt only through his ministers, of which there are seven; the *Ministro dos Negocios do Imperio*, whom we may call prime minister, is essentially the ruler of Brazil, while he can keep his position. Unfortunately, the emperor cannot always choose the best men for his cabinet. So affairs are ministerially mismanaged, until a crisis arrives, and a new set of mismanagers come into power.

For the rest, there is a congress, very much like ours, except that the senators are chosen for life, and the deputies (answering to our representatives) for four years; the emperor has a voice in the selection of the former, and the Imperial princes are members of the senate by right. The provinces answer to our states in theory, except that the presidents are nominated at Rio, instead of by the province itself, as with our governors. Practically, the province is completely under control of the General Government.

The Brazilian constitution is well enough, and the laws are well enough—models of clearness and justice. But we are beginning to learn, in these latter days, that constitutions

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\* When his father abdicated, in 1831, the second Pedro was a child; until his majority, in 1840, the country was governed by a regency.

do not always determine the fate of a country. We lay down this strong foundation, and on it we build gold, silver, precious stones, wood, hay, stubble—a sad lot of rubbish the constitution must support sometimes; one gets to wishing that it were a less solid foundation, that haply it might give way under its load, and leave clear ground for building anew. Brazil is sadly over-governed—that is one difficulty. There are twice as many officials as are required, and the whole government system is bound together with tangles of red tape, gibbet-ropes for justice and commerce. Most of the higher posts are filled by gentlemen, and they are ready enough to do a service if you approach them in the right way. The petty officials are often stupid and tyrannical; they delight to show their power over their victims, but they cringe before their superiors like dogs. The result is, that everybody seeks the higher influence, and justice goes very much “by favor.” Hence, there is corruption and mismanagement.

There is corruption, also, in politics, even more than in the United States. Matters are worse here, because Brazilians are blind partisans, and intensely hot-headed ones; a difference of political creed is enough to separate friends, or even members of the same family. Yet it would be hard to show the distinctive beliefs of the two great political parties. “Conservative” and “Liberal” preach very much the same doctrines; only they fight for different men. The amount of vituperation used in these quarrels is something amazing. A political newspaper is an organ to abuse the opposing party, and this abuse, vile enough to ruin any respectable American paper, is heaped on with the least possible regard to truth; a man is bad, because he belongs to the other party; a law is bad, because he initiated it; and so



on. Oh! it is a black mass, this sink of Brazilian politics; there are ballot-box stuffings, and false countings, and mean trickery without end; our own contests are as nothing to these for wickedness.

I do not believe that Brazil could successfully carry on a republican government; she lacks the first element of safety for a republic—the fusion of classes. Our North American civilization is not stratified, any more than the ocean is; if men stay at the bottom, it is by their own gravity, and not by birth or station. The stratified condition never did hold in the United States; but South America imported it from Spain and Portugal, and has clung to it ever since, as blindly as if it were an element of human progress.

Brazil does not recognize the mechanic-pedler class, as a factor in her civilization; but who shall say that it may not come to the surface, after all, and astonish the world with a miracle of human progress. The like has happened before: witness the French revolution, or the more quiet social revolution that is going on now in England. Unrecognized elements are forever baffling political foresight.

Perhaps it is what South America needs: a revolution. Not a horizontal one: surface whirlpool of political strife, that would only serve to engulf some hapless hundreds or thousands; the world is surfeited with such movements. A good, honest, vertical revolution it should be; one to bring stronger elements to the top, and destroy forever the old, diseased ones. I like not to see a million or two of men seated on top of ten times their number of plebeians, and yelling “Freedom!” to a believing world. Stratified freedom! The French understood themselves better; to their “*liberté*” they pinned another idea, “*égalité*”; it has cost them torrents of blood—but compare France and Spain now!

Ah, well ! I hope that, when the revolution does come, it may come peaceably, and end in the amalgamation, not the wiping out, of the upper class ; a class which, with all its faults and mistakes, has yet many good and noble men in it. Remember that Brazilians are expiating the sins of their fathers, as well as their own. Society here was wrongly constituted in the outset ; it is not the fault, but the misfortune,



In the Passeio Publico.

of the educated class, that they are separated from the rest of the nation.

I do not mean to say that the mechanics and shopkeepers are better, as a class, than the merchants and gentlemen ; they are ignorant, and dirty, and degraded ; that is obvious enough to any stranger. But their work gives them brawn, and their poverty protects them, in a

measure, from immorality ; physically, they are the superiors of the upper class ; mentally, they might be, if they had a chance.

So Rio social life goes on, with its mingling of good and ill ; the ill sadly near the surface, it must be said ; the good, more than we know of, maybe, often hidden from sight. The mixture is tempered by impulsive, sociable manners,

and quick wits, and ready tongues ; and then there is the frosting of French politeness over all. I can lounge in the cafés, and interest myself in the lively conversation about me ; my neighbor lights his cigarette with mine, and touches his hat, and is quite ready to answer questions. Of an evening, I can saunter through the Passeio Publico garden, listening to the music, and watching the students strolling about the gravel walks and exhibiting themselves, after the manner of students elsewhere. It is a pretty place, this garden ; the people are proud of it, and indeed, it would be an ornament to any city, with its stately palms and noble old trees. There is a marble-paved promenade fronting the bay ; of a fine evening you will find hundreds of idlers here, from the pleasure-loving city : people neatly and quietly dressed, after the French fashion, conversing in low tones and politely making way for each other as they pass.

There are parties and balls, ceremonious dinners, and quiet tea-drinkings ; even church fairs, oddly like the orthodox ones at home, but, of course, with all the glitter and pomp of the Catholic Church. Theatres are open almost every evening ; the actors are generally indifferent or bad, but sometimes, when Lisbon sends over one of her stars, a real treat can be enjoyed. The Portuguese have very decided histrionic talent. I have seen a " Marie Antoinette " here that melted the house to tears ; though, for that matter, the men would have gone crazy the next day over some French ballet divinity. Occasionally, one of the great musicians varies his European or American triumphs by a trip to Rio ; then he is fêted and poetized, and crowned with metaphorical laurels ; the newspapers are full of him ; the air is redolent of him ; the susceptible people cannot see enough of their idol. There is much musical taste among the

Brazilians, but with a vast deal of piano-strumming vulgarity.

There are some admirable public institutions at Rio; hospitals, asylums, a polytechnic college, academies, and so on. Some of the city parks are very pretty, and away beyond Botafogo there is the Botanic Garden, with its splendid



Beer-Garden.

avenue of royal palms, a hundred feet high; you will remember the fine engraving of this avenue, in Mrs. Agassiz's book. Besides the palm-avenue, there are shady walks, and groves of tropical trees, and green lawns, such as you rarely find at home. Of a fine afternoon, the garden is full of pleasure-seekers; it is easy of access, since the Botafogo railroad company

extended its line to this place, seven miles from the Ouvidor. People come out to enjoy the ride in the open cars, as well as to visit the garden; I doubt if any other street-railroad in the world passes by such a succession of lovely scenes.

In the city there is a museum of natural history, rather showy than good; the collections are badly labelled, and

badly arranged. But for another institution I have only praise: the National Library, with one hundred and twenty thousand printed volumes, and a vast store of valuable manuscripts; such a library as any city in the United States would be proud of. It is open to the public, day and evening, and the reading-room is almost always occupied by students or general knowledge-seekers.

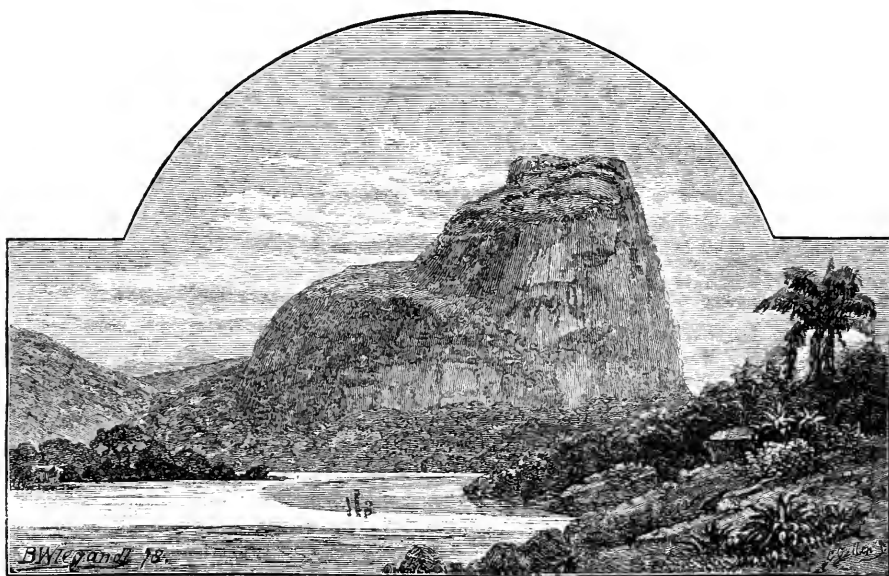
The Director—a kindly, scholarly gentleman, you may be sure—takes pains to show us many of the old Jesuit manuscripts; the library has numbers of these, relics of the extinct monasteries and mission-houses. So we bury ourselves in them, and get to dreaming of those strange, hard-working, self-sacrificing fanatics—the most wonderful human machines, probably, that the world ever saw, and the most unselfish Christian heroes. What a deal of romance there is in early Brazilian history!

But away from the dusty, yellow manuscripts, away from leaden air and stifling heat and political mud, I love best to climb to the hills and woods. What endless charity there is in Nature! One comes from the city with a sore heart, and an idea that the world is all going wrong, but here is the sunshine lying on rocks and trees; delicate ferns and mosses clinging to the sides of beetling mountains, getting their living, we know not how, but getting it bravely and happily; there comes back the old, childish instinct of faith, which our ponderous philosophies cannot utterly destroy; the faith in world-government and world-destiny; the faith that looks for brighter things to come out of these dark ones.

This is only a cluster of mountains, set off from the loftier ranges beyond; none of them are very high. The Corcovado and the Gavea rise two thousand five hundred feet above the sea; the Tres Irmãos are lower; and the highest

of all, Tijuca, is nearly three thousand five hundred feet from the water. But their strange, abrupt forms, towering against the sky, make them wonderfully impressive; the Tres Irmãos, or the Gavea, will bear comparison with many mountains of three times their height.

All through the cluster there are picturesque roads and by-paths. One magnificent, broad highway leads up to the village of Tijuca, five or six miles from the city—a charm-



The Gavea.

ing retreat, among the cliffs and woods. There are fine houses and grounds there, and hotels, largely patronized by foreigners, and a waterfall, with a reputation for grandeur which is a libel on its quiet beauty. People come to live in Tijuca during the sickly season; the place is always cooler and healthier than the city.

Beyond Tijuca, we can follow a winding mountain-road, that leads down to the other side of the cluster, by the seashore; here we are at the foot of the Gavea, a great, square-cut mass, inaccessible except to the hardest climbers. The

white surf comes up gallantly almost to its base, and sets off the dark rocks, like jet in ivory. I think this is the finest rock-mass I ever saw.

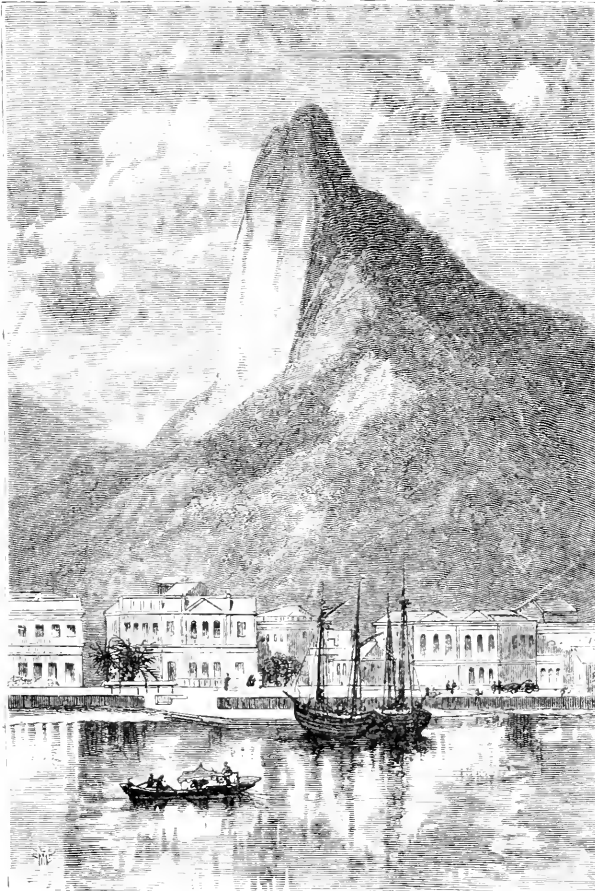
Then there is the moss-grown, seventy-year-old aqueduct that brings water to the city from the Corcovado. For two or three miles, where this aqueduct runs along the mountain-side, the government has built a carriage-road; a shady, quiet road, with glimpses of the bay and the city below. The aqueduct road is a favorite strolling-place; of a Sunday, especially, you may see family groups here, enjoying the woods and the fresh air. Here, too, the numerous tribe of Rio naturalists come to hunt for beetles and butterflies, ferns and orchids, in the second-growth woods.

Farther up the mountain-side the woods are thicker, though still second-growth; the ground is carpeted with ferns; the rocks are covered with them; in the ravines there are wonderful tree-ferns, twenty feet high or more, vying with the stately palms, and broad-leaved philodendrons. Nature loves to decorate these mountain-woods, even after her proudest glories have been shorn away.

It is a hard climb to the top of the Corcovado, but it is worth the pains. The peak itself is a mere point, or rather two points, with a bridge between them, and low parapet walls; for if one were to fall off from these rocks, he would go sheer down, fifteen hundred feet or more, to the forest-covered slope below. The Corcovado peak is accessible only from the south; on the other three sides there are bare, perpendicular precipices.

Down below, the city and bay are seen on one side; on the other, the Botanic Garden, with the picturesque *Rodrigo de Freitas* lake before it; in front, the suburb of Botafogo, and the Sugar-loaf rock towering above the mouth of the

harbor ; beyond all, the blue ocean, fading into immensity, the horizon so distant that it is lost in haze. Often the clouds gather around this peak, and through the rifts you get telescopic glimpses of houses and rocks below. Again, the clouds have covered everything, you are floating in gray space ; nothing visible above, around, below ; only this rock



Botafogo and the Corcovado.

without a foundation, and the wet mist beating in your face.

Once only I had a sight here, the like of which I may never meet with again. The clouds were floating, perhaps a hundred yards below, and on them the afternoon sun painted a complete and most vivid rainbow ; a circle, like a halo, with the shadow of the mountain-top in the centre. It lasted only

for a moment, but it was worth the climb, and the voyage of five thousand miles.

Here, from the hills, I look down on the city below, and my thoughts are healthier, as the air is purer about me. I have faith in the future of Brazil, because I have faith in human hearts and human progress. I remember that there



is a leaven of good even in the wicked city. I remember that goodness and truth and reason are always strong ; say what you will, they are getting the better of evil the world over, and they will get the better of it here. I reflect on the generous impulses that Brazilians have shown, their kindness to strangers, which I should be the last to forget, their religious tolerance, their brave sacrifices to get rid of slavery. And now I believe that there is a stronger national life, underlying these clouds and bright spots. Look over to São Domingos ! We stood there in the morning, and saw this rock, like a glistening diamond over the mist ; but the mist did not hold it up ; rock must be founded on rock. And I tell you that the good men and good deeds in Brazil betoken good in the Brazilian character ; good that will increase as the world grows older. It is a law of nature, of human progress ; a law that shall stand when these mountains have been melted away, and lost in the sea.

## CHAPTER XVI.

### PROFIT AND LOSS.

THE two extremes of Rio commercial life are represented by the Rua Primeiro de Março and the market. These two are adjacent.

Rua Primeiro de Março is the banking and commission-house centre. It runs parallel to the water-front. The roadway is broad and well paved; the buildings, for the most part, dingy and respectable; the counting-rooms rather dark. It might be a down-town street in New York, but for the lack of noise and bustle. On the whole, it is as untropical as possible.

We get the impression of a quiet but thriving business. In the counting-houses we see clerks writing at long desks; money-brokers pass foreign gold and silver over their tables, in exchange for Brazilian notes. The banks are never thronged; a few people come and go, noiselessly; the bankers take their own time, and the waiting depositors do not fret and fume.

The commission and importing business, on this and the neighboring streets, is largely carried on by English and German firms, but there are some Brazilian, and a few French and American houses. These large firms are the main prop of Brazilian commerce; almost every shopkeeper in the

country is, more or less directly, dependent on them. There are houses here that have been in existence since the beginning of the century.

The market is twenty rods off, by the water-side. It is a great, square building, with as little architectural taste as markets generally have. On the land side, there is a small square, where the fruit-women congregate in force, and make the air hideous with their jabbering. Large docks, or basins, are walled in

from the bay ; here the market-boatmen unload their cargoes of fish and vegetables. There are two or three other markets in the city, but most of the fishing-boats come here ; in the morning the basins are crowded with them — as odd a jumble as we will find about Rio.

The fish are in

astonishing variety ; we can find a hundred or more on almost any day ; some of them are remarkable for their strange forms or bright colors. There are loads of crabs, shrimps, and lobsters—favorite dainties with the Brazilians ; oysters there are, too, but uncivilized ones, very lean and stringy ; at Rio, the oyster falls from his solid, aldermanic, Chesapeake-bay condition ; consequently, he is unpopular



Fruit-seller.

and generally neglected. The fishermen crowd and jam each other, in their efforts to reach the shore, but they are good-natured enough. We miss the Indian faces of the Pará market ; most of these boatmen are mulattoes, or black-bearded Portuguese. Their boats are broad, heavy affairs ; a few only have round-bottomed, narrow dugouts, as different as possible from the Amazonian canoes ; the paddle is long and lance-shaped, and is used on the two sides alternately ; the canoes themselves are very crank.

The main building, and the smaller one behind it, are partitioned off into passage-ways and stalls, much as in the Fulton and Washington markets. Besides these, there is a court, with stalls on either side and stands in the middle. Here are fruit-dealers, turbaned negresses, seated under huge, white umbrellas ; poultry-sellers, with their great, arched baskets of doomed chickens and ducks, poking out stupid heads and remonstrating after their fashion ; trays of fish and flesh and vegetables ; bunches of greens, mixed with sunny oranges and pineapples in glorious array ; a combined odor of fruitiness and fishiness, with wafts of fifty other things, not always pleasant ; a mingling of noises like a horde of school-boys at play, with that negro click-click sounding over all ; a confusion of figures, that ever change and never cease to be picturesque ; that is what we see in the Rio market of a fine morning. But you do not see it in my description, and you never will see it in print ; these tropical markets are as indescribable as a tropical forest.

The more practical side is disappointing ; the market is not very well ordered, and everything is abominably dear. This is excusable in marine produce, for the fisheries are not very rich, however great the variety may be. But it is hard to understand why oranges and pineapples should cost three

times as much as in New York, or why onions and sweet potatoes should be very much higher than they are at home. Time was, when the demand at Rio was well filled, from market-gardens around the head of the bay ; then fruit and vegetables were very cheap. But what with the seductions of coffee-raising, and the speculative period that followed the Paraguayan war, these gardens have been abandoned ; at present the city must look for its supplies to distant villages and plantations.

In front of the main building, the produce is sold as it comes in from the country ; and here the peculiar volubility of the marketmen is most apparent. The result of all this confusion is, that the fruit and vegetables are sold at last. Only a small portion of the produce goes to the market itself ; the most is taken by street-hawkers, of which there is a small army here.

The hawkers are about the only men in Rio who appear to be in a hurry. Through the city, we hear their quaint, endlessly varied cries at all hours, startling us at times by their oddity ; every peddler exhausts his ingenuity, inventing some torture of language and sound, wherewith he may announce his wares. They pass through the streets at a dog-trot, never stopping unless some one calls them, from a house, with that peculiar "*psstsch!*" the one unwritable word of the Portuguese language. Queer, not unpicturesque figures, some of them are. Here, for instance, is a fish-peddler, with two shallow baskets slung from a pole across his shoulders ; or an old negro fruit-seller, balancing his great tray of pineapples and oranges on his head, and giving vent to a hideous whoop at intervals ; or a poultry-man, with a score or so of fowls in baskets, or tied together by their legs, and strung from his neck.

The streets would not be Rio streets, if the peddlers were taken out of them. Besides the market-men, there are the itinerant cloth-merchants, rapping their jointed yard-sticks, and the ubiquitous candy-boys and newsboys, and the cake-women, mirrors of African ugliness. If the cook has a pot



Poultry-seller.

or a pan to mend, she waits for the street-tinker; she will know of his passing by the tink-tink that he makes, beating with an iron rod on one of the pans which he carries. All these hawkers thrive, because the Brazilian women are averse to

shopping in the city; it is only recently that they have done so at all. The peddlers are still an important element in retail trade.

As for the shops, we can observe them to advantage on the fashionable Rua do Ouvidor. We find, in the first place,

that none of them are very large, for a place of three hundred and fifty thousand inhabitants; but what with the Ouvidor, and the streets about it, the *number* of retail houses is sufficiently surprising; you wonder how so many can live. For instance, there are some twenty book-stores in the city; yet the Brazilians, as a whole, cannot be called a reading people. So it is with almost every other branch; retail business is overdone, and there is little chance for competition.

The shops are well arranged to attract the eye; on the Ouvidor, especially, some of the



Charcoal-seller.

windows are really artistic, and there is no lack of plate-glass and showy signs. For the rest, the windows might be in Paris or New York; only, two or three of them are bright with feather flowers and pinned butterflies, not an unimportant branch of commerce here.

So much for the outside: now, if we have occasion to buy anything on the Ouvidor, we shall find, as in the market, that prices are high, and, with most wares, the quality is none of the best. I fear, too, that the average Rio shop-keeper does not concern himself greatly with abstruse questions of moral responsibility; so a stranger may expect to

pay in proportion to his greenness. At Pernambuco and Pará, as we have seen, the tradesmen are much better.

When we come to consider the cause of these high prices, we remember that there are few manufactories in Brazil, and these do not fill one-tenth of the demand for goods ; so there is an immense import trade, and everything must pay roundly in the custom-house. Ergo, these duties, as well as the freight, must be added to the price of goods ; that is plain enough. But there is another reason, not so conspicuous, but not less important, and it is well that our American manufacturers should understand it.

You must know that business in Brazil is tormented by a demon known as "long credit." For instance, A., a retail merchant, buys a thousand dollars' worth of goods of B., importer ; A. gives his note for eighteen months ; longer, sometimes. Now B. must make allowances for the possibility of A.'s failure ; so he must increase the price of his goods. If A. pays interest, he, in turn, must allow for that, and increase again the price of the goods ; if there is no interest, B. must sell still higher, so as to remunerate himself for his money lying idle so long. Now if you or I buy a cigar, or a spool of thread, we must pay all these added charges. In other words, we pay for money that lies idle during eighteen or twenty-four months, as the case may be.

Latterly, the workings of the long-credit system have been still further complicated by an unstable paper currency. We will suppose, for example, that B., an American, sold his thousand dollars' worth of goods in 1877, and received, in return, a note for two thousand and fifty milreis, the current exchange, payable in January, 1879. But in 1879 the note is worth only nineteen hundred and fifteen milreis ; or, if it was



made on a coin basis, the giver must pay twenty-two hundred and fifty milreis.\*

Some of the Rio merchants have made efforts to do away with this nefarious system, but with no success, simply because it is so deeply rooted; half the retail houses in Rio would be ruined if they were obliged to take short credit, or buy for cash.

In Brazil, the credit system runs through everything; it cripples agriculture as well as commerce; it extends even to the forests and rivers. We have seen how, on the Amazons, every Indian is in debt to some trader, who, in turn, owes all that he has to the Pará merchants. So, in the central provinces, the sugar and coffee plantations are often loaded down with debts; so, around Rio, many coffee-growers are hopelessly entangled. Yet the rotten fabric holds together, somehow; failures, though common, are not nearly as numerous as might be expected. Generous nature gives material so freely, that each year sees the building patched up and freshly painted, to all appearance as good as new.

Will it always stand? Not unless a stronger and better material be introduced; not unless whole beams and rafters be torn out to make room for new ones. Not unless the foundation be strengthened by a more economical government, and a better financial system. Whether that time will come, or whether the building will hold together until it does come, I cannot say.

What then? Must manufacturers turn their attention away from Brazil?

Not at all. But they must take care not to entangle themselves; they must know whom they trust; in two words,

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\* Practically the notes are generally discounted at a bank; but the result is the same; or rather, our spool of thread or cigar pays the bankers' profits also.

they must be cautious. And just here I may venture to say a word to our manufacturers about this much-talked-of Brazilian trade. I am not personally interested in the matter, but I have tried to keep my eyes open during a four-years' residence in Brazil; and I find that my ideas coincide pretty nearly with those of prominent merchants, American and Brazilian, with whom I have conversed.

Ever since the centennial year, our newspapers have been full of glowing articles on the South American empire, and the immense commercial field that is open to us there. Long columns of statistics have shown us that our importations from Brazil reach forty-five million dollars, though our exports to that country are only seven million dollars; while England sends forty-five million dollars' worth to Brazil, and takes only a small share of her products. Why, it is asked, do we not pay for Brazilian goods with American goods; and the writer clinches his argument by showing that we can manufacture many articles cheaper than Europe can. "Behold," cry these gentlemen, "a country where Americans can make money; a commercial paradise!"

As soon as these newspaper articles appeared, a crowd of young adventurers rushed to Brazil, with samples of American goods, wherewith their fortunes were to be made. But by and by they came trooping back again with long faces; after two years, we cannot see that our exports to Brazil have increased in any very surprising degree; and yet the figures were all right, and the argument was most convincing.

I think we may set it down as a commercial axiom, that people will buy where they can buy cheapest, *all other things being equal*. So, if American goods can be delivered in Rio, or the Feejee Islands, cheaper than English and German goods, and placed in the market *under equal advan-*

*tages*, there can be no earthly doubt that the Rio or Feejee merchants will buy of us rather than of our European neighbors.

But now let us simplify the subject by a simile. Suppose that Jones has a country store in the village of Farmertown ; he is an old resident of the place, and has long sold his calicoes at ten cents per yard. There appears one Mr. Moses, with a hooked nose. He opens a new store, and says to all the town : “ Here ish calicoes for nine cents a yard ; come and buy of me ! ” But the old farmers are steady and careful ; they look at Mr. Moses, observe his hooked nose, and drive on with their wives to buy of Jones, whom they can trust. Mr. Moses need not be discouraged ; if his cloths are really good, they will find their way in the favor of his rural customers ; but he must not expect to have large sales at once.

Suppose, again, that our friend Moses has only certain patterns or colors of calico ; very pretty they may be, but not fitted to the Farmertown tastes and fashions. Jones has always consulted those tastes, and his new stock, just in from New York, is selected in strict accordance to it. Mr. Moses’ cloth may be just as good, but I fear he will sell it slowly, though his honesty may never be doubted ; he must fit his stock to his customers.

Suppose, finally, that Mr. Moses is just in from Germany or Palestine ; can speak nothing but Hebrew. He may put Hebrew placards in his windows, offering his calicoes at half price, but never a customer will he get, unless it be a chance member of his tribe who passes that way.

Now apply the example to our foreign trade. Jenkins, representing several American manufacturers, arrives at Rio, or the Feejee Islands, with samples of goods. He brings

letters, of course, to prominent American merchants, who have seen fifty men fail, and know, in advance, that Jenkins will fail also ; consequently, receive him politely, as they are sure that he will not injure their business.

Jenkins visits the house of Pereira & Carvalho, or Mission-



A narrow Street.

ary-Eater & Brothers, and exhibits his samples of goods. These gentlemen are old customers of Brown & Co., English merchants; and though it is true that Jenkins can undersell the said house, yet, at present, our native firm prefers to continue with these established friends. Perhaps they are somewhat involved with Brown & Co., and could not change if

they would. They will be glad to see Mr. J. at some future time.

Or again, Jenkins has goods which might do for the West Indian trade, but were clearly never intended for Brazil or the Pacific Islands ; consequently, they are not wanted at any price.

Finally, Jenkins is probably on his first voyage. Portuguese and Feejee are alike unknown tongues to him ; all his

eloquence is lost on people who cannot understand him, and his goods remain unsold. Jenkins canvasses vainly, and becomes discouraged; his board-bill is running up (he is certain to have taken rooms in the most stylish hotel), and worse than all, he finds that there are established American merchants who can sell as cheaply as he can; so, after a month or two, he packs up his trunks and goes home, light in pocket, heavy in heart. Jenkins says that Brazil and the Feejee Islands are humbugs, and he thirsts for the blood of all newspaper correspondents.

If American manufacturers wish to push their wares in Brazil, they will do well to take a lesson from the English houses. They will never build up a business in a few weeks; certainly, they will never do it by employing young agents, who leave home with the avowed intention of returning within a few months at most. Many of our manufacturers have never exported goods before; they have yet to learn how they shall accommodate their wares to the wants of other countries. As Rome was not built in a day, so we must not expect that our foreign trade is to spring at once into exuberant growth. If we are to gain a footing in Brazil, we must do precisely as our German and English neighbors have done: establish regular agencies and branch houses; study the wants of the country, and adapt our goods to them; finally, avoid all rash speculations, and bubble schemes. Even then we shall have many difficulties to contend with, which we can only vanquish with time.

Take the two items of cotton goods and cutlery: both of these can now be made cheaper and better in the United States than anywhere else in the world; unless the current of trade changes, we will eventually rule the markets of Brazil, and other countries, in these manufactures. In Brazil

they have a start, and are slowly pushing their way in the public favor.

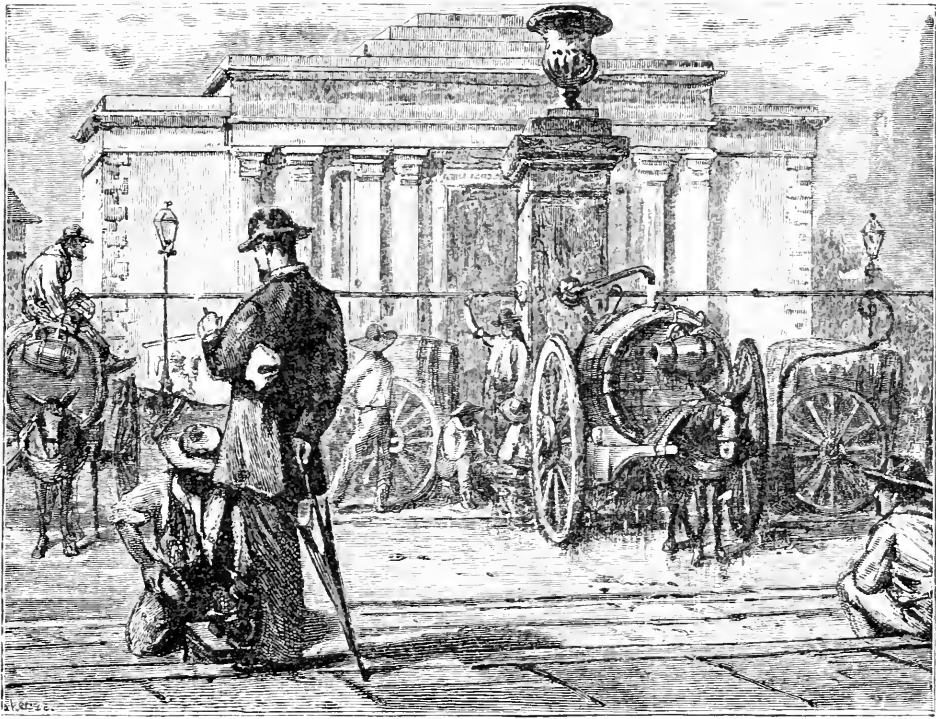
English manufacturers employ resident commission merchants at Rio, or very often, they have branch houses. Young boys are sent out from London to be educated to the foreign business ; they enter these established houses as clerks, readily learn the language, and become accustomed to the details of Brazilian trade before they take more responsible positions. Eventually, the boys often become partners in the house ; they may take charge of the Rio branch, or they may return to England with a thorough knowledge of the necessities of Brazilian trade, so that they can adapt their business and manufactures to it.

At present, it is not probable that our manufacturers will venture to establish branch houses in Brazil, though it would be precisely the wisest course ; only, the profits would be little or nothing for the first year or two, until the firm was well established. Such branch houses have the advantage that they save the commission on goods, and, being directly responsible, they can be trusted, even for large orders. Besides, they can make their own prices, suited to the market, and they can have stock on hand for immediate delivery when required. I believe that such a house, established, let us say, by one of our cotton manufacturers, would be almost certain to make its way.

But if this cannot be done, at least employ regularly established commission merchants, giving them the most liberal terms, and even a certain latitude as to prices. Or, if young men are sent to Brazil, let it be with the intention of keeping them there, on salary ; they must have time to study the language, and to study the Brazilian trade as well. Be content to lose at first, that you may gain afterwards.

Adapt your goods to the Brazilian market, and for that, take the judgment of men old in the trade. For instance, the Brazilian merchants require a particular width and length in cloths; you can make these as well as the English and French, and will have to do it, if you wish to compete with them.

We are often warned of the opposition which we must



Water-carts in the Largo de Carioca.

look for, from English merchants in Brazil. With branch houses, representing manufacturers, this is, no doubt, true; but for the rest, you may be sure that an Englishman is just as ready to buy of you as of one of his countrymen, if he sees a clear profit in the operation.

You must remember that many of the English houses sell what is known as "surplus stock." A manufactory in England, after filling all its orders for a year, may still have

time to spare ; rather than discharge their hands and stop their mills, the owners ship goods to Rio or elsewhere, selling them at cost or a trifle over. They would not do that in England, because it would ruin their own trade ; they can afford to do it here, because the effect of these low prices will not come back on them.

There is another, very grave matter, to which I wish to call the especial attention of our manufacturers. If we enter a Brazilian store, we may see, for instance, American Collins' axes for sale at twelve dollars per dozen ; also, axes with the same mark, and similar appearance, for eight dollars and fifty cents per dozen. Now, if a Brazilian customer enters, he takes the cheaper article, for most Brazilians have yet to learn the economy of buying high-priced goods. You may suppose that Collins gains as much, in the long run, because the inferior article will be sooner worn out, and the customer will want more. Not a bit of it, though. The cheap axes never came from America at all ; Collins makes only first-class articles, and if he saw one of these miserable imitations he would disown it at once.

The imitation goods are almost exclusively German ; and whatever German merchants may be elsewhere, in Brazil they have a reputation for the most untiring industry, and the most elastic of consciences. Once or twice a year, every Brazilian city is regularly canvassed for false labels, principally for American hardware and cutlery ; but also for other articles—American, French, and English. The evil is a double one : first-class goods are driven out of the market, and honest manufacturers get an evil reputation, which they by no means deserve.

The Brazilian retail merchant buy these imitation goods, with a perfect knowledge of their worthlessness, because he



can sell them to his own advantage. I am glad to say that a recent treaty between the United States and Brazil places these falsifiers within the grasp of the law ; but even if the law is enforced, there will yet be many false goods to compete with ours. I see no way but for our manufacturers to place on the Brazilian market an inferior grade of goods, *marked as such*, but which will yet be better than the worthless German things that are sold at the same price. That would drive the imitations out, and preserve our reputation as well.

I have heard the complaint, over and over again : "American articles are too good for the Brazilian market." An Amazonian trader, for example, buys English prints, because he can get them for seven cents per yard ; it matters little to him that the goods are half starch ; they are glossy, and pretty to look at, and he can sell them to advantage to his Indian and mulatto customers. Why should he pay nine cents for American prints, though he knows that they are far stronger and better. But there are grades of American prints that can be delivered in Pará for seven cents per yard, or even six cents, all duties paid. Fill them with starch, smooth them out, and they would sell as well as the English ones, so that the patterns were well chosen. They would pass for what they are—inferior grades ; and if Brazil demands these inferior grades, there is no reason why we should insist on selling her higher ones. Only let us have no false pretences.

One point remains to be considered : Why cannot Americans establish manufactories in Brazil, and thus save themselves the heavy duties that are levied on imported goods ? In some few instances they might do so with profit, but in general, the goods made in South America

cannot compete with foreign ones ; the cost of building and carrying on a factory, of any kind, would be very great in Brazil, both from the import duties on material, and the lack of skilled labor. Foreign manufacturers are content with small profits, because their sales are large and rapid ; and they could almost always undersell a Brazilian manufacturer, whose operations must, necessarily, be small and slow.

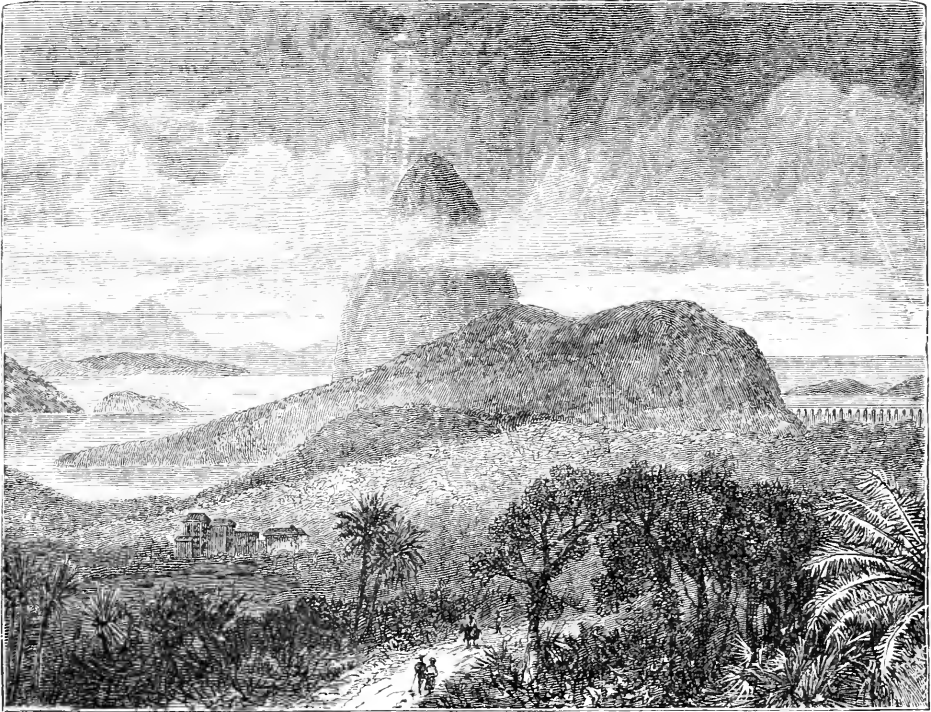
There are a few cotton factories in the country, all of them, I think, depending for their support on government aid. Iron foundries have been established in most of the coast cities, but only for irregular work, repairing, and the like. I knew of one American founder, who came to Brazil with the avowed intention of starting a manufactory for tools and agricultural implements ; but after a careful study of the field, he concluded that the cost of working, necessarily with imported materials, would make the enterprise simply a ruinous one.

Paper-making might pay well, especially if some of the native fibres could be utilized in this way.\* Glass-making, also, is worthy of consideration ; so, possibly, are type-founding, copper-founding, furniture-making, and so on. Small manufactories of soaps and candles, and various oils, have done very well. But for ordinary mechanics, I can give only one kind of advice ; that is, keep away from Brazil, unless you are paid to go there, or have money enough to keep you idle for a year or two ; even then, think long before you leave the United States. It is not that skilled labor is not needed here ; it is, sadly ; but a vast number of clumsy workmen drive it out of the market. A mechanic

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\* Cotton rags could be obtained, I think, as they are in the United States, by means of small traders ; they are all wasted, at present.

could establish himself, only after long and patient working and waiting. He would have to master the language, learn the peculiar service required of him ; and, after all, his family would be deprived of society ; he himself would be looked down upon as one of an inferior class, by men who were beneath him morally and intellectually ; finally, living expenses (at least in Rio de Janeiro) are very high, and pay-



The Sugar-loaf, from the South.

ment for his work would not be very secure. In nine cases out of ten, a poor mechanic will make more money in the United States than in Brazil.

I know that I shall be criticised for these views ; I know that they are widely opposed to the glowing accounts of various newspaper correspondents. But, writing always as a friend of Brazil, as an admirer of her splendid natural resources, I must yet write the truth. And the truth I have

seen on many a sad, weary face ; I have heard it from men who came to the Southern Empire full of eager expectations ; who have found themselves, too late, strangers in a strange land, penniless, without work, ignorant of the language—worst of all, perhaps, with wife and children looking to them for support. The writers of these glowing paragraphs have never seen this side of the picture ; their holiday trip showed them only the bright surface of Rio life, its gay society, its pleasant parks and gardens, the heavier truth was underneath.

American capital and labor have a chance here ; American labor alone can do nothing at all in the southern provinces,\* and little enough in the northern ones.

Finally, *no one* should start in *any* Brazilian business, without a careful study of the ground,—not from books, but from personal observation. Over and over again, I have wondered at the folly of men who invest their whole capital in some Brazilian enterprise, when they know no more about Brazil than they do about Sirius. I knew of one, for example, who left a good business in the United States, and went to a Brazilian city with a large stock of goods ; but they were selected for American customers, and were useless in a foreign mart. Of course, he lost heavily in his venture. With a six months' study of the ground, he might have done very well.

Once a month, we can see the United States flag flying over the finest steamers that enter the port of Rio de Janeiro. I am not acquainted with Mr. John Roach, but I heartily admire the plucky spirit he showed, in building three such magnificent ships for the Brazilian trade. Very few persons

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\* Unless, *perhaps*, in Rio Grande do Sul.

know the difficulties and risks of this trade. Let us consider them for a moment.

Our exports to Brazil are small, and are likely to remain so for some time to come ; we cannot expect to leap at once to commercial pre-eminence, against such obstacles as we have to contend with. The most important article that Brazil receives from us is flour, and the freights on that are always low, because ships, going to Rio for coffee, are glad to get a cargo out, at any price. Our steamers may, occasionally, carry a full load of flour, but in general, the owners may be happy if they get half a cargo to Rio. For the return trip, there will be large shipments of coffee ; the Roach steamers have brought forty-four thousand bags through to New York, at one time. But it must be remembered, that the coffee-shipping business is active only during half of the year, and even then, the freights are very low, owing to the excessive competition.\* As for passengers, an important item on a transatlantic steamer, the Brazilian line gets very few of them. The freight shipments, between Brazilian ports, are small.

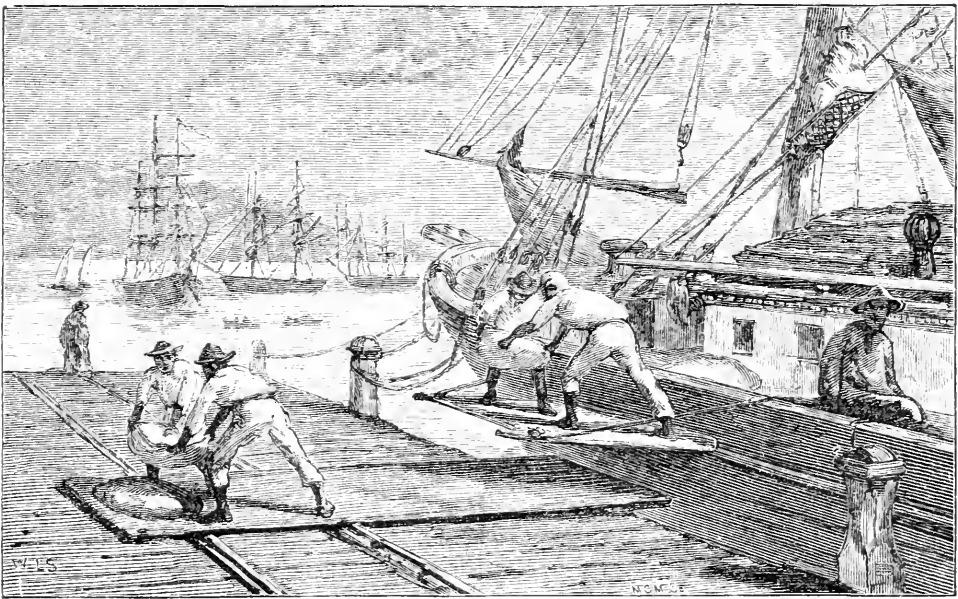
Now, when we consider the immense outlay required for building and running these great steamers, we come to the conclusion that Mr. Roach's enterprise is likely to prove a non-paying one, unless he gets a good, round price for carrying the mails. This is, precisely, the much-talked-of "Brazilian steamship subsidy." Mr. Roach and his friends, with much reason, insist that they are not asking for a subsidy at all, but for a mail contract : a generous one, because they

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\* During the coffee months, besides the fleet of sailing vessels, there are irregular steamers, three or four each month, running to Rio from New York or Baltimore ; thence, probably, with grain, to England, where they can get large cargoes for the return trip to Rio.

must depend on it, in great part, to remunerate them for their heavy expenses. In general, I am opposed to government aid for private enterprises, because it destroys legitimate competition ; produces monopolies in trade. But here, it appears to me, is a somewhat peculiar case. Nobody doubts the great advantages that must accrue to our commerce with Brazil by regular and rapid means of communication ; and yet, a line of steamships, between the two countries, cannot pay for itself simply by the freight and passengers that it may carry. England, France, and Germany, knowing the importance of a foreign commerce, have encouraged the formation of steamship companies for the South American trade. So European houses have enjoyed far greater advantages than the American ones. Mr. Roach offers equal advantages to us ; he offers, also, to carry the mails regularly ; and for this he wants one hundred and fifty thousand dollars, yearly, from Brazil, and an equal amount from the United States. Brazil, to whom the matter is of less importance than to us, has very readily acceded to his terms ; I heartily hope the United States will do so also, and that this plucky gentleman may not be forced to withdraw his fine ships from the southern trade. The Garrison line of Brazilian steamers was driven out entirely when the mail contract was withdrawn, and the consequence was, that for four years we had only the most irregular and unreliable communication with Brazil. I, for instance, being then in Pará, two thousand five hundred miles from New York, received my letters by way of England, Portugal, and Pernambuco, about ten thousand miles around ; they were ten or twelve weeks old when they reached me ; indeed some of them never did reach me, at all. Imagine the difficulty of carrying on business under such circumstances !

Ever since the John Roach line was established, our trade with Brazil has been increasing, slowly and steadily ; just as it should in a healthy growth. So I believe that the line ought to be encouraged, unless it can be plainly shown that it is unworthy of encouragement. To those who urge that other vessels would be driven off by the subsidized line, it may be answered, that sails can no longer compete with steam directly ; the English steamers would beat them, if the



Loading a Ship with Coffee, at Rio.

American ones did not. Sailing vessels must take their true place of floating storehouses and trading ships. Most of those in the Rio commerce are now owned, wholly or in part, by their captains ; these men often buy a portion of their cargo outright, and so get the importer's profits as well as the freight dues ; or, frequently, they bargain to carry a load of coffee for some merchant, who takes advantage of the long passage when he is expecting a rise in prices. The sailing-captains welcome this new steamer line, because it secures

regular mail communication, and helps them to regulate their purchases.\*

Many people are not aware that we have indirect telegraphic communication with Southern Brazil. A cable from Europe runs to Pernambuco, and thence to Rio ; it was projected by an English company, and has been in operation for five or six years. Of course, the coffee- and sugar-merchants, and shippers generally, have not been slow to avail themselves of this cable ; but its usefulness is seriously impaired by the high message-rates. I suppose that these are unavoidable, where the business is so small ; as it is, the company's report does not show a very encouraging income.

As for the land telegraphs, the few that are in operation are under government control ; it follows that they are conducted in admirable routine, and non-conducted when routine happens to fail them. Constructed according to the most approved European models, they are, of course, very expensive. What would our American telegraphers say to a single, little-used wire, suspended on handsome iron poles,

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\* Everybody knows that American ships sail under English colors. During the war, they were forced to do so, as a protection against privateers ; and since then, our stupid laws have kept them under what is, essentially, a false flag. The ship may belong to an American, may be commanded and manned by Americans, may trade, for example, only between the United States and Brazil ; yet there are the lying colors that proclaim her English nationality. For the last fifteen years, a large portion of our ships have been built in Nova Scotia, because the cost is less there than at home. Now, a Nova-Scotia-built ship cannot legally be the property of a citizen of the United States ; therefore, it is registered in the name of some real or supposed Englishman in Nova Scotia, who, in truth, has nothing at all to do with it ; the captain passes a required examination of the English Board of Trade ; and so the ship is placed under the English laws. Shipmasters like this arrangement, because of the superiority of the English consular service, and the protection afforded to them by English laws. The United States Government does not trouble itself greatly about its ships or citizens abroad—more shame to us that it is so. Yet, this jumble of absurdities is supposed to protect American ship-builders.



which cost, on the average, eleven dollars each ! Send a fifty-word message, and you will learn how these telegraph-poles are paid for.

However, the telegraphs are a commercial blessing, and we can forgive their faults. Brazil improves slowly ; she is behind the times, and she knows it ; hence, is often tempted into expensive luxuries, simply from a desire to imitate European nations. She wants the eminent practicability of Yankeedom, that is content with wooden telegraph-poles and shabby railroad-stations until better ones can be afforded. Real improvements are not wanting, as, for instance, in the postal service. Twenty years ago, it was in such a chaotic state that one could hardly trust an important letter to it ; but a new system has been introduced ; the mail distributions are reasonably prompt and regular, though by no means perfect ; a fine, new post-office has been put up at Rio, with all the modern improvements and a good deal of modern expense. Cheap postage is still a desideratum.

Government everywhere is a necessary evil ; government in Brazil is rather more evil than there is any necessity for ; so, at least, it appears to an outsider. At any rate, commerce, here, has no more reason to thank its rulers than it has elsewhere. " If Congress would adjourn for a year, business might get on its feet again," growls our Wall-street friend. Rua Primeiro de Março growls also at the inflictions of her rulers ; but when she brands the senators as fools, and the ministers as traitors, I cannot agree with her. Pray for better rulers ; and pray fervently that you and I may never rule, for, believe me, we would make a worse mess of it than the well-meaning men whom we have elected to mismanage.

Broadly speaking, the Brazilian Government would be a reasonably good one if it were not so parental. Commerce

gets too much petting and coddling ; when it ought to take care of itself, it is cared for, like a sick child ; so it has come to look upon itself as a weakling, and when it has need of anything, it cries always for government aid. The help comes in subsidies, guarantees of interest, public aid for private enterprises, advances of public money, and so on. Hardly a railroad, or a steamboat, or a factory, is maintained exclusively by private capital ; the very theatres are built by the government ; the public libraries and museums and hospitals are supported by it ; in all Brazil, I doubt if you could find a large college or academy that has no government aid. The result is, that private enterprise is crippled ; it cannot stand against the subsidized works, and, if it could, it is utterly unused to standing alone ; it has been helped so long that it can no longer help itself. Young men seek for government positions, because they are the ones that command high salaries ; honest work is degraded, and commerce is weakened by the very efforts that are made in its behalf. And after all, commerce must pay for such lame assistance. It pays roundly in the heavy import duties ; but the import taxes will not supply the need ; hence there are provincial duties on goods passing from one province to another ; there are municipal duties for seaport towns ; finally, there are export duties on almost everything that leaves the country, or would leave it if the duties were taken off. The argument for these export duties is that they are paid by foreign consumers. No doubt it is true, when these foreign consumers are forced to come to Brazil for a supply, as they are for rubber, and, so far, for coffee. But where Brazil must compete with other countries, the export duties are simply suicidal. The cotton industry has been almost ruined by them ; the sugar industry is struggling hard against them, and a dozen valuable pro-

ducts have never got out of the country at all, because they cannot bear a tax of fifteen or twenty per cent. on their value.

Wise men call for direct income taxes, that commerce may be relieved from its burdens. I think there is a growing sentiment in favor of this change, and, in the slow course of Brazilian events, it may come to pass. Whether subsidies and interest guarantees will be abolished, I doubt; but it is certain that the Government cannot go on as it has, without ending in national bankruptcy. Even with the heavy duties, its income does not nearly meet its expenses; there is a yearly recurring deficit, and latterly this deficit has been so enormous, that the press and the country cry out in dismay. It is a pity that the Government is not wiser in its expenditures; for, beyond this, it has shown very good financial management, and a national honor that is exceptional among the South American countries. Brazilian bonds stand well in foreign markets, because the interest is promptly paid; holders do not trouble themselves greatly about the far-away principal.

In 1878, the cries of famine-victims in Ceará forced Brazil to the unhappy expedient of paper money. Now, she had seventy-five million dollars' worth of this currency, already afloat; the new issue made itself felt at once in a decrease of the market value of paper milreis,\* as compared with English gold—it would hardly be right to say Brazilian gold, because that is hardly ever seen. Depreciated currencies are common enough in South America, but, hitherto, Brazil has escaped the evil. Uncharitable prophets say that she will go on in the downward road, now that she has started; but I, for one, hope to hear of better things. At all events,

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\* The Brazilian milreis is worth about fifty cents, par value; it must not be confounded with the milreis of Portugal, equal to our dollar.

the croakers who see *no* hope in the business outlook of Brazil, should be condemned as pessimists; even if the paper money goes down to a tenth of its value, business will survive. In Montevideo, you buy a cigar for five dollars, and a hat for two hundred; yet you will hardly find a more thriving city on either coast of South America.

Remember, that Brazil has only begun her march of improvement; you cannot expect perfection at once. Fifty years ago, she was in such a fossilized state that you might have despaired of her future; but fifty years have seen vast strides in advance. If I seem to be a fault-finder, I can only plead that I write for Brazilians as well as for Americans. I believe that Brazil will remedy these ills; but as long as they are there, I cannot, in justice, conceal them from Americans, who are trying to get a commercial footing in the country. Frankly, I look forward with hope to this commercial union, because I think that it will be a benefit to both countries. That is why I write of the difficulties that lie in the way of it, and the ills that Americans must put up with at Rio.

## CHAPTER XVII.

### THE STORY OF COFFEE.

**I**N 1878, Brazil exported more than five hundred million pounds of coffee. A large proportion of this went to the United States. Coffee is the principal product of Brazil, and the coffee tax constitutes a great share of the government revenue.

The story begins on the hills around Entre Rios, away back of the Organ mountains. Here the landscape is quiet, like home. The woods, for the most part, have been cut away ; good, hard roads wind through the valleys ; the river is spanned, at intervals, by stout bridges.

A rural landscape, purpled all with the breath of summer. Deep, mellow purple over the distant slopes ; shadowed purple in the hazy intervalles ; purple, like a king's robe, about the river-courses. There, in the swampy ground, the forest is wild and luxuriant yet, with palm-trees, and festooned lianas. On either side of the road there are coffee-plantations, stretching up the hill-sides. Some of them are dark green, like the green of trailing myrtles ; these are strong-bearing fields, five or six years old. Others, the worn-out grounds, are full of dead branches, with only two or three green shoots about each root. Others, again, have just been planted, and the long rows of young trees are con-

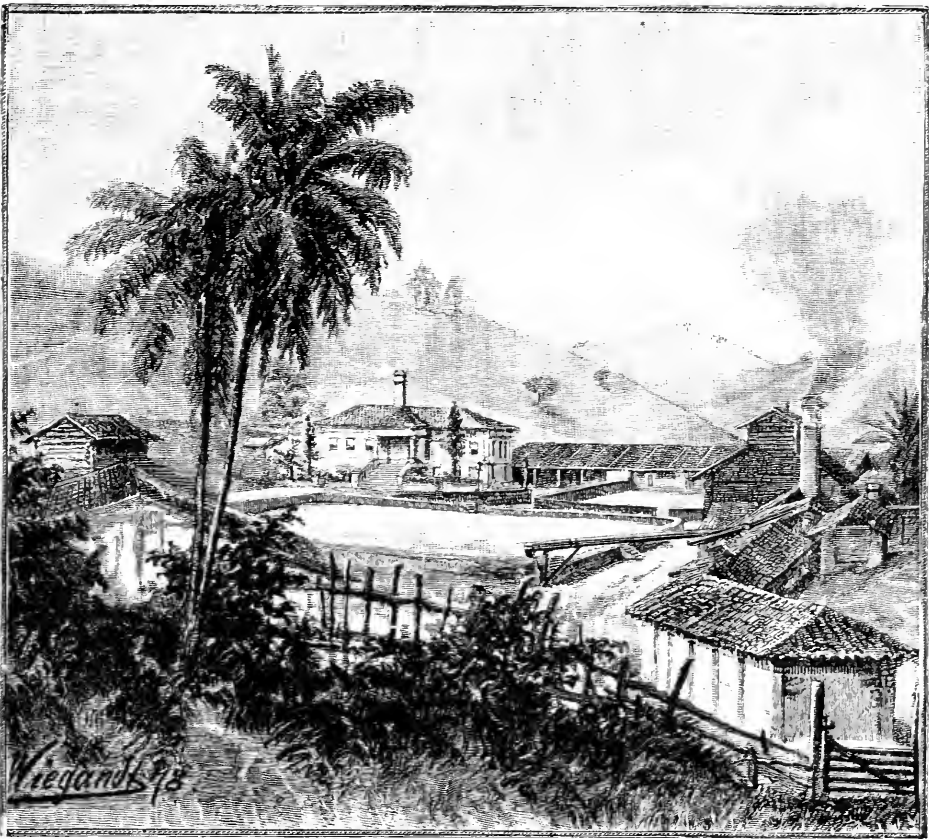
spicuous over the neatly weeded surface. The air is full of a perfume like jessamine—wafts from the thick-blooming trees. The dazed insects go revelling in it, dive deep to the honey-cups, come out staggering with their strong draught, tumble about over the branches in shameless inebriety. Zoom! The great bumble-bees, the well-to-do, sober ones, go flying off to the purple hills with their loads.

Carl and I enjoy it all. Carl is my German friend; we have come up from Rio together, to study the coffee-plantations. My friend is mounted on a bony horse; I bestride a most disreputable, kicking mule. Behind us rides our half-breed guide, José. Iron-shod hoofs rattle merrily; the sorry beasts take new life out here on the breezy slopes. Over the hills, into the purple; past whitewashed farm-houses, and little country stores; down through shady ravines, among the tree-ferns and great, glossy philodendrons; catching glimpses of virgin forest in the valleys; passing on, by mile after mile of coffee-fields on the uplands.

And now a row of cocoanut-palms comes in sight, and a cluster of roofs in a great, walled space, like a prison-yard. We draw rein at the folding-doors; an old negro comes up, with bowed head, and straw hat held humbly against his breast. He swings the door open for us, and we clatter up the gravel walk to the proprietor's mansion. It is a large, low building, tile-roofed, and kalsomined with some light tint; there is a shady piazza, and a few flowering shrubs grow in little enclosed spaces before it; beyond this, we observe no attempt at ornament. In front of the house there is an immense, smooth pavement of concrete, occupying half an acre or more, with a low wall around it; this is the *terreiro*, on which coffee is dried. Beyond are the various mills and workshops, and the negro quarters, opening

toward the master's house ; there may be twenty buildings in the cluster, all neat and substantial, but as unpicturesque as possible.

"Come in, come in, gentlemen!" cries Senhor S., meeting us at the steps, and shaking hands with us as we alight. S. is a great, burly fellow, rosy like an Englishman, and not



Coffee-plantation in Southern Brazil.

at all ceremonious. We are invited to seat ourselves on the piazza, and S. reads our letters ; we explain that we wish to remain for a few days, that we may study plantation-life more closely.

"*Pois não?* Why not? A room shall be prepared at once. Meanwhile, let us breakfast." As S. is a bachelor,

there are no introductions. The breakfast—a very good one—is discussed amid much pleasant conversation. Two or three negro servants stand behind our chairs, but, like most Brazilian house-servants, they are more for show than for use. The dining-room is large and bare; at one side there is a writing-desk, with a few books, mostly Portuguese or French agricultural manuals, and government reports. Two or three unartistic pictures adorn the walls; the furniture is solid and angular, and badly matched. Retiring to the parlor to smoke our cigarettes, we find the latter apartment very little better. There is a piano, of course; the furniture is rich, but tasteless, and it is placed at right angles to the wall; there is not a single book in the room, and save the agricultural treatises, none are in the house. Our host was expensively educated in Brazil and Paris; he is naturally intelligent and progressive, but, like many other Brazilian planters, he is entirely absorbed in his plantation; beyond the coffee-trees, and the slaves, and the milreis that he may gain from them, he has little interest in the world and its doings.

He discourses of the plantation, and of the improvements that he is introducing. This was one of the old-time estates, that had fallen into negligence and decay. Senhor S. has brought young vigor, and driving management to it; he has abandoned the old tracks, introduced new machinery and new ideas, and his neighbors are astonished to see the wonderful results which he has obtained from apparently worn-out land. There are four thousand acres in the estate, two thousand two hundred of which are under cultivation; the rest is virgin forest. The fields count four hundred thousand bearing coffee-trees, and our host is just planting as many more; large plots, also, are appropriated



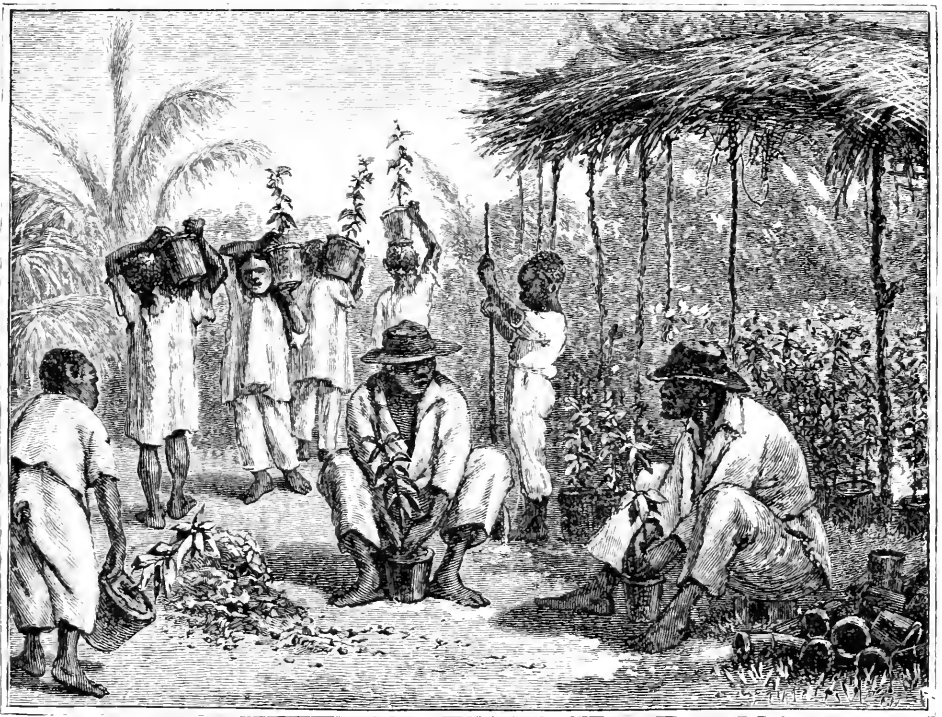
to corn, beans, etc., with which the two hundred slaves are fed.

In Southern Brazil, a coffee-field seldom lasts more than thirty years. The plantations are made on the fertile hill-sides, where the forest has been growing thick and strong. But the soil here is never deep; six or eight inches of mould is the utmost. In twenty-five or thirty years, the strong-growing coffee-trees eat it all up.

Most planters simply cut down the forest, and leave the trees to dry in the sun for six or eight weeks, when they are burned. S., more provident, lets the logs rot where they lie, which they do in a year or two; in this way, the ground gets a large accession to its strength.

Back of the house there are two yards, or small fields, together containing perhaps four acres. The ground is covered with earthen pots, set close together, leaving only little pathways at intervals. Each of the two hundred thousand pots contains a thriving young coffee-plant. The ground forms a gentle slope, and water is constantly running over it, so that it is always soaked. The pots, through orifices at the bottoms, draw up enough of the water to keep the roots moistened; the young plants are protected from the sun by mat screens, stretched on poles above the ground. All this system is a costly experiment of Senhor S. Most of the planters take root-shoots at random, from the old fields, and set them at once into unprepared ground. The experiment has probably cost Sr. S. twenty thousand dollars; the pots alone were eleven thousand dollars. But he will make at least fifty thousand dollars by the operation. In the first place, he gains a good year, in the start that he gives to these young plants. Then, they are not put back in the transplanting; the pots are simply inverted, and the

roots come out with the earth ; they are set into mould or compost, which has been prepared in deep holes ; the tender rootlets catch hold of this at once, and, in a day or two, the plant is growing as well as ever. Dark green and waving are the young plants ; they rejoice in their generous fare, with all the fulness of plant joy ; drink in the sunshine and the strong air, grow and thrive, and are ready to be generous in their turn.

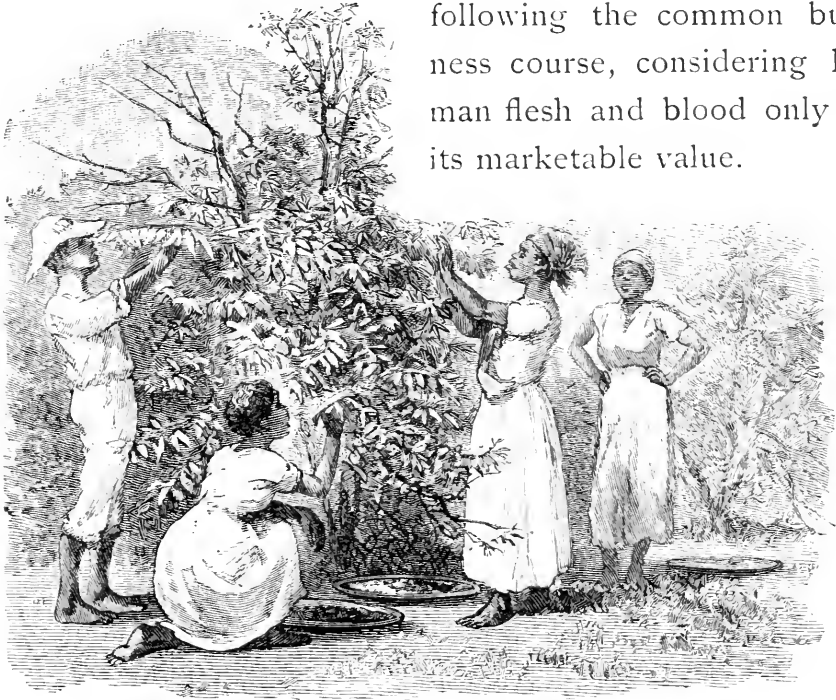


The Viveiro.

The nurslings come from selected seeds of half a dozen varieties. Sr. S. has them planted, at first, in small pots. A dozen slaves are at work, transplanting the six-inch-high shoots to larger pots ; little, tired children carry them about on their shoulders, working on as steadily as the old ones, for they are well trained. Sr. S. wants to make his plants last fifty years ; so he is careful and tender with them. The

little blacks will be free in a few years ; so his policy is to get as much work as possible from them, while he can. Do not blame this man harshly, you who keep weary girl-clerks standing all day behind your counters ; you who throw a married man out of employment, because you can get a bachelor at a dollar a week less. You and he are but

following the common business course, considering human flesh and blood only for its marketable value.



Picking Coffee

The plants grow and thrive, out on the hill-sides. Warm sunshine caresses the leaves ; generous rains feed the little tender roots ; the ground is kept free from intruding weeds and bushes ; the planter waits for his harvest.

After four years, the trees are six feet high, and begin to bear ; by the sixth year, the crops are very large ; three or even four pounds per tree, at times. Meanwhile, corn and mandioca are planted between the rows ; often, in a new plantation, the expenses are nearly covered by these subsidiary crops.

Only a few of the slaves are employed in the new fields at present. November is the principal gathering month, and almost the whole plantation force must be at work in the bearing orchards. From sunrise to sunset, men, women and children are gathering the berries in baskets, working silently and steadily under the overseer's eye. Every day, each slave gathers, on the average, berries enough to



Coffee-berries on the Tree.

produce fifty pounds of dried coffee. The pickings are collected in carts, and brought to the mill-house, where the seeds must be prepared for the market.

The coffee-berry is a little larger than a cranberry, and somewhat like one in appearance. Each of the two seeds is enveloped in a delicate membrane, the *pergaminho*; this, being strongly adherent, can only be removed by much rubbing, even when the seed is dry. Outside of the *pergaminho* there is a thicker and less adherent covering, the *casquinho*. The two seeds, with their respective inner and outer coverings, are together enveloped in a tough shell, the *casco*, which, in turn, is surrounded by a thin, white pulp, and outer skin, forming the berry. Nearly all the processes of preparation seek, first, the removal of the outer pulp, by maceration in water; second, the drying of the seeds, with their coverings; third, the removal of the several coverings,

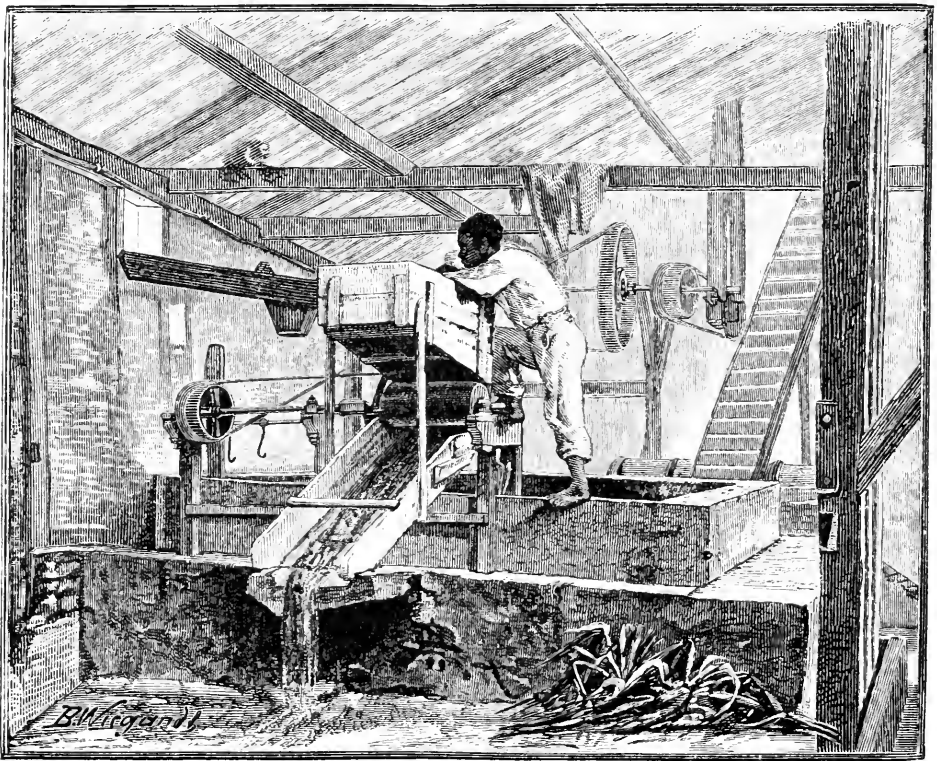
after they are dry. To these three processes is sometimes added a fourth, by which the seeds are sorted according to their forms and sizes.

On the hill-side, above the mills, there is a cement-lined trough, through which a strong stream of water is running. This water has been carefully cleansed by a series of strainers, and the trough is covered to keep out all rubbish. Through a funnel-shaped opening, the coffee-berries are thrown into the stream, which carries them down with it, to a large vat; from the bottom of this vat, a pipe draws off the heavier berries to the pulping-machine (*despolpador*), while the lighter, and almost valueless ones, are floated off with the surface-water to another pipe.

The pulping-machine is simply a revolving iron cylinder, set with teeth, and covered on one side by a curved sheet of metal, against which it impinges as it turns. The berries, carried to the cylinder with the stream of water, are crushed between it and the cover, and the pulp is thus loosened. Passing from the pulping-machine to a vat beyond, the water is kept in constant motion by a rapidly revolving wheel; by this means, the pulp is thoroughly washed off, and carried away with the water, while the heavier seeds sink to the bottom; thence they are carried to a strainer, which drains off the water, and leaves the seeds ready for the next stage. Thus far, the process employed on the plantation of Sr. S. is similar in principle to that seen elsewhere; the tanks and troughs are, indeed, more elaborate in their arrangement, and hence the outer pulp is washed away more thoroughly. The seeds are still enclosed, two together, in the outer and inner shells.

The next process—that of drying—is effected in two different ways; both of these are employed here. This

great, cement-covered pavement, in front of the house, is the *terreiro*, used in the old process ; the seeds are simply spread out on it, and allowed to dry in the sun. About sixty days are required for this ; meanwhile, the seeds must be raked over and turned during the day, and gathered into piles and covered at night. When a sudden shower comes up, the

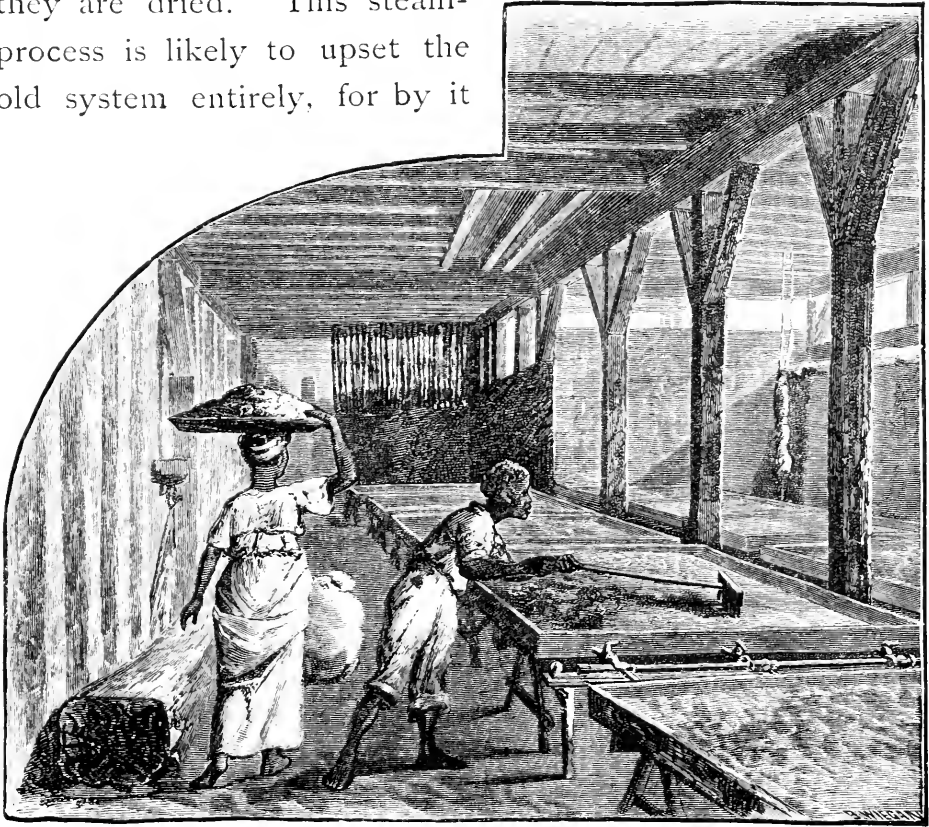


The Pulping-machine.

*terreiro* is picturesque with moving figures of slaves employed in this work ; for the rest, it is unpicturesque enough, like everything else about a coffee-plantation, except the negroes.

But Sr. S., ever ready to seize modern improvements, is adopting the new system of drying by steam. Back of the house there is a long, low building, which one is loath

to enter, for the air within is sweltering ; a light vapor floats about the roof, and is carried away through openings under the eaves. We see rows of great, zinc-covered tables, with raised edges. Little clouds come from the drying coffee on these tables ; one or two negroes move about, stirring the seeds here and there, and removing them as they are dried. This steam-process is likely to upset the old system entirely, for by it



Steam Drying-machine.

the coffee is dried thoroughly in a few hours, and the long delay of the *terreiro* is done away with, while the product is much improved in quality. Against the expense of the drying-machine, which is not very great, is set the absolute saving of labor ; three, or at most four workmen, will attend to twenty tables : quite enough for the largest plantation. The coffee runs no danger of injury by rains, and, the process

being a constant and rapid one, there is no accumulation of half-prepared seeds.

The coffee-grains are still enclosed in their inner and outer shells, which are now dry and somewhat brittle. The removal of these is effected by a much more complicated and expensive process. The first impression produced by our host's mill-house is one of utter confusion. It is a large, substantial building, such as might do for a flouring-mill in the United States. The floor, and two galleries above it, are occupied by a series of complicated mechanisms, some of them like threshing-machines, some like fanning-mills, some like nothing at all that a northern reader is familiar with ; and all in motion with a constant clatter and grinding and pounding, by which, somehow, nicely cleaned coffee-grains are evolved from the dirty-looking nut-like shells that come from the drying-tables. You think that so small a result might have been obtained by a less complicated and expensive apparatus. There are, indeed, less formidable mills, in which the work is done by two or three machines ; these are found on smaller estates, where the planter is satisfied with a mediocre product, and only a few hundred or thousand arrobas of coffee are prepared each year. But the plantation of Sr. S. turns out, annually, from sixteen to eighteen thousand arrobas, and in a few years the yield will be greatly increased ; his mills must shell and clean all this in two or three months. The large number of machines secures, not only nicety in the result, but a greater capacity for work, to meet the wants of an extensive plantation. The thirty thousand dollars expended on the mill-house and mills was wisely laid out. All the great coffee-planters are adopting these improved machines, most of which are of American invention and make. Many of the



mill-proprietors bring their coffee to the large *engenhos* to be cleaned, as a northern farmer brings his grist to the miller.

A machine described is as uninteresting as a machine before the eyes is attractive. Carl and I spend half a day, studying the mill-house; but it will be better to epitomize the processes, in a rough diagram.

The dried coffee-nuts are brought to the mill-house in baskets, and deposited in a bin, *a*. Thence the coffee is carried by a band elevator, *b*, to the ventilator, *c*, where sticks and rubbish are sifted out, and the dust is fanned away. Now it passes down through a tube, *d*, to another elevator, *e*, which carries it

to the sheller (*descascador*), *f*, where the outer and inner shells (*casco*, *casquinho*) are crushed by revolving toothed cylinders. The grains and broken shells pass through

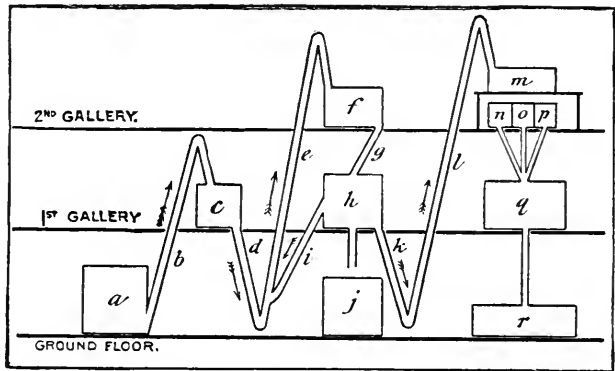


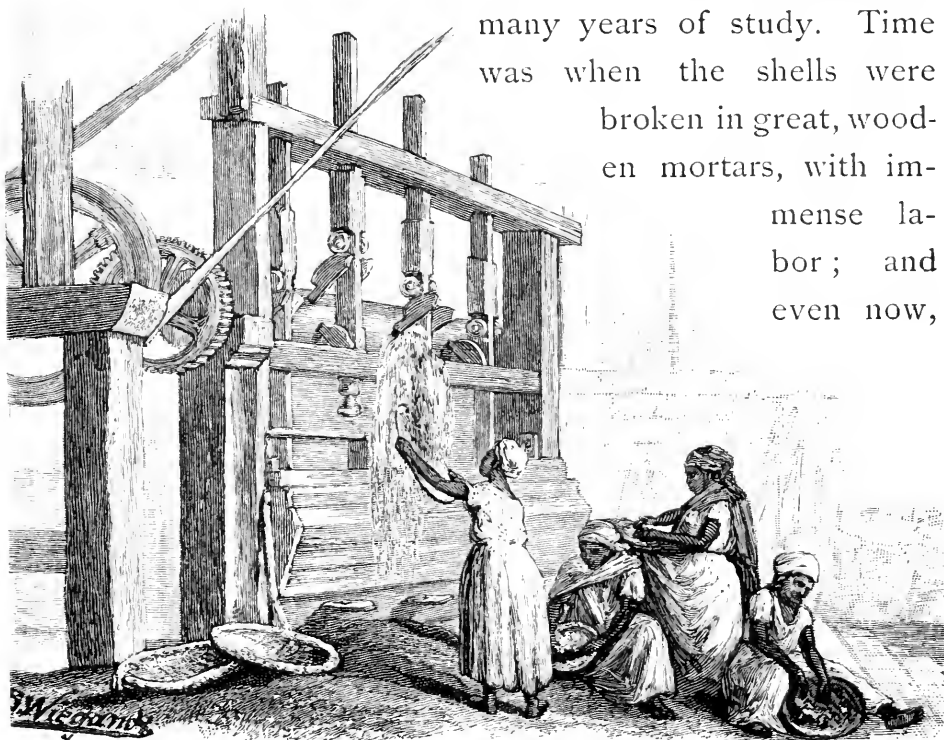
Diagram of a Coffee-engenho.

a pipe, *g*, to the ventilator, *h*, where the shells are sifted and fanned away; the unbroken nuts are separated on a sieve, and passed by the pipe, *i*, back to the elevator, *e*, and so again to the descascador; the shells and rubbish fall to a bin, *j*, from which they are removed for manure; the coffee-grains fall into the pipe, *k*, and are carried by the elevator, *l*, to the separator, *m*. This separator is composed of a pair of hollow, revolving, copper cylinders, pierced with holes of different sizes and shapes; the coffee-grains, dropped into the cylinders, fall through these holes, and are assorted

by them into large and small, flat and round grains, which pass into different bins, *n, o, p*.

A portion of the fine inner covering of the grains (*pergaminho*) still remains. This is removed in the *brunidor, q*, with constant shaking, trituration and fanning. Falling into the bin, *r*, it is removed, and carefully picked over by hand, before it is finally conveyed to the sacks.

These machines are the outgrowth of many years of study. Time was when the shells were broken in great, wooden mortars, with immense labor; and even now,



Coffee-sheller (old form).

on many of the plantations, the work is done in larger mortars, with great, metal-shod pestles, moved by steam or water-power. In place of the ventilator, also, one sees shallow hand-sieves, which the negro women use with wonderful dexterity, separating the fine dust, and tossing out the shells with a peculiar twist of the hand.

A large plantation, like that of *Sr. S.*, is a little world in

itself. There are smithies and work-shops; machines for preparing mandioca, a saw-mill, and a corn-mill, and a sugar-cane mill, and a still where the cane-juice is made into rum. At one end of the enclosure there is a brick-kiln, and near by

a pottery, where most of the pots in the viveiro were prepared. The machinery is moved, partly by a turbine-wheel, but principally by a large steam-engine, which Sr. S. shows with pardonable pride. From the machine-house, he takes us to his stock-yard, which, though entirely a subsidiary affair, is by no means insignificant; there are eighty fine



Picking over Coffee.

oxen, and nearly thirty mules, a hundred swine, and fifty sheep, with turkeys, fowls, guinea-hens, and pigeons—a feathered host. To crown all, there is a zebu ox from India, which Sr. S. bought in Paris, and imported for experiment.

Picturesque groups of washerwomen gather about the great stone basin, where their work is done. Every morning we hear the clatter of a chopping-machine, cutting up sweet cane-tops for the cattle. In the kitchen the slave rations are prepared in great kettles and ovens. Here a blacksmith is busy at his forge; there a carpenter is ham-

mering or sawing. Among all we do not see an idle negro, for even the white-haired octogenarians are employed in basket-weaving or other light work, and all children, except the merest babies, must go to the fields with the rest. Only on Sundays, a few of the weaker ones gather about the quarters and indulge in something like recreation.

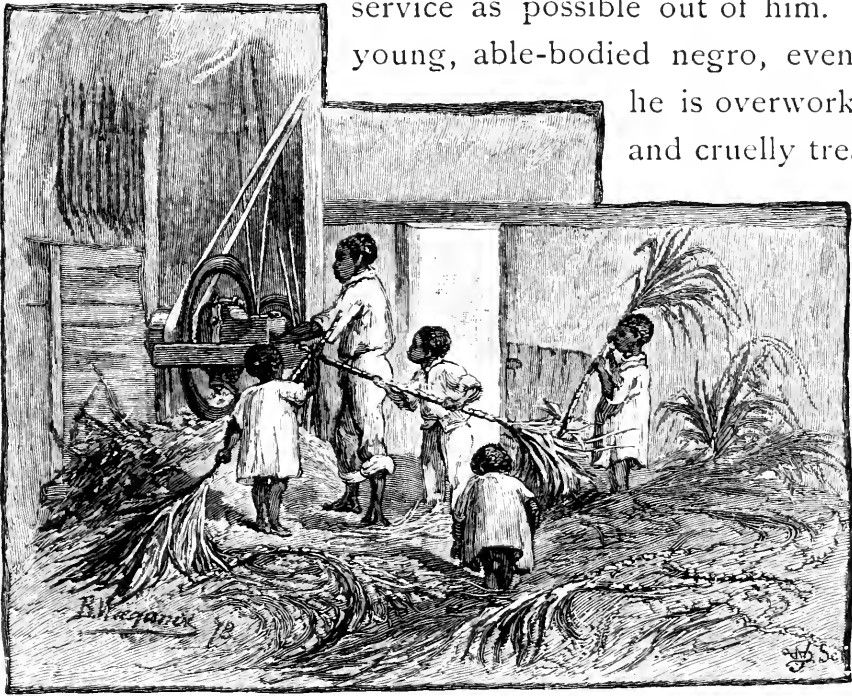
The negroes are kept under a rigid surveillance, and the work is regulated as by machinery. At four o'clock in the morning all hands are called out to sing prayers, after which they file off to their work. At six coffee is given to them ; at nine they breakfast on jerked beef, mandioca-meal, beans and corn-cake ; at noon they receive a small dram of rum ; at four o'clock they get their dinner, precisely like the breakfast, and, like that, served in the field, with the slightest possible intermission from work. At seven the files move wearily back to the house, where they are drawn up to the sound of a bugle. From the tripod at one side a bright fire half illumines, half conceals, the dark figures, sending flashes over the walls beyond, and casting long shadows on the ground. The tools are deposited in a store-house, and locked up ; two or three of the crowd, perhaps, advance timidly to make requests of the master ; after that all are dispersed to household and mill-work until nine o'clock ; then the men and women are locked up in separate quarters, and left to sleep seven hours, to prepare for the seventeen hours of almost uninterrupted labor on the succeeding day.\* On Sunday there is a nominal holiday, which, practically, amounts to but three or four hours ; none of the Catholic holidays are celebrated here, and even Christmas is passed unnoticed.

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\* Some masters work their slaves with more humanity, but many are even more exacting.

The Brazilian system of gradual emancipation, however wise it may be in some respects, brings with it an inevitable evil. If a man has unrestrained control of his slave as long as the latter may live, he treats him well, as he would treat his horse well; he does not wish to diminish the value of his property. But if the slave is to be freed in ten or fifteen or twenty years, the policy of the master is to get as much

service as possible out of him. A young, able-bodied negro, even if he is overworked and cruelly treat-



Cutting Cane-stalks for the Cattle.

ed, may reasonably be expected to last twenty years. Humane masters look beyond that, and treat their slaves well; but the majority see the matter simply in a business light. If a man is foolish enough to lend his horse for five years, he must expect to get back a poor, broken-down animal. Yet he who overdrives the horse or the slave may be rather blinded than naturally cruel; blinded by that thickest of all bandages, business. Before now, I have known a respectable merchant who would cut down the salaries of all his

clerks on one day, and give a thousand dollars to the poor on the next.

All through the provinces of Rio de Janeiro and São Paulo are scattered great plantations, like this that we have been studying. Some, indeed, are even larger, embracing a million bearing trees or more, and employing many hundred slaves. Small plantations are numerous, but many of them are deeply in debt, and their success is altogether problematical. A vast share of the profits of coffee-planting are absorbed by the large proprietors, who, with two or three hundred slaves and scores of labor-saving machines, can easily outstrip their poorer neighbors. The present financial system of Brazil encourages the rich planter, and retards the poor one. There is no land-tax; the best coffee-lands are all taken up by capitalists, who hold them for years, uncultivated. Eventually, with the extension of internal communications and the increased demand for planting-grounds, they secure enormous profits. The ground held by Sr. S. was purchased in the open market, twenty-five years ago, at the rate of ten dollars per acre. The present system involves two great evils: first, it keeps immense tracts of ground lying idle; second, it makes the land so high-priced and difficult to obtain, that it is quite beyond the reach of the poorer classes.

An American can better comprehend these evils, by reflecting upon the results which a similar system would have brought to the United States. Suppose that no land-tax had been imposed in our western territories. The whole country would have been bought up by speculators, for a few cents or dollars an acre. These men would have held hundreds of square miles; the land would have attained a fictitious value; a few rich men would have acquired enor-

mous fortunes, and immigrants would have been kept out by the high prices, and difficulty of obtaining farms. Immense tracts would still be lying idle, and, instead of controlling the grain trade of the world, the United States might now be buying of other countries. Such results would have been only the legitimate outgrowths of a system by which land, ever increasing in value, could have been held without limit or restriction.

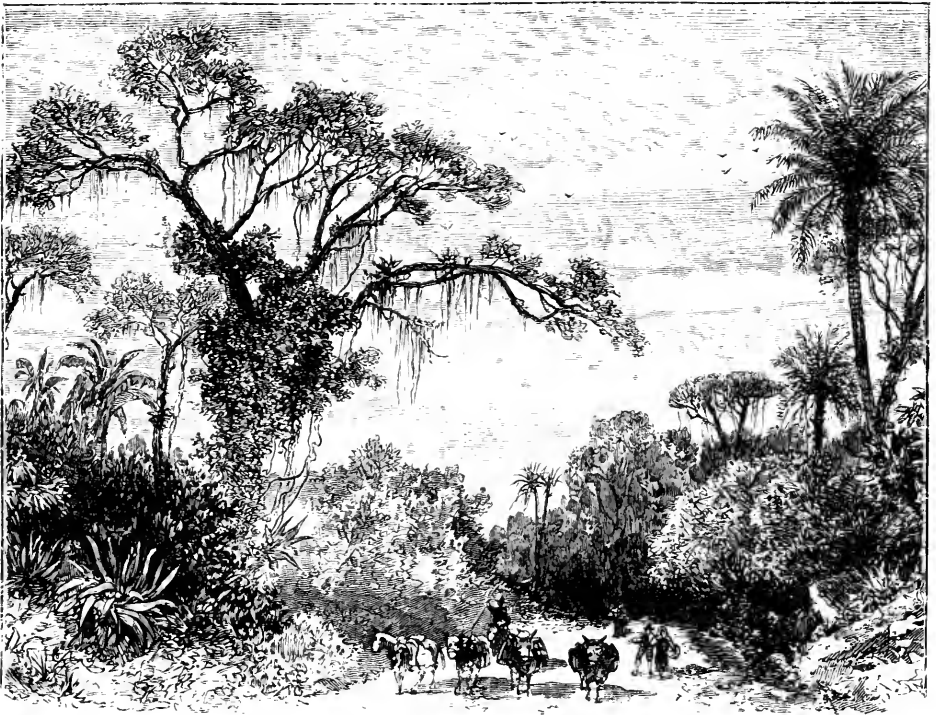
So Carl and I reason, as we ride back to Entre Rios in the great travelling-carriage. We admire the enterprise and keenness of our host; we would be ungrateful if we did not feel his ready hospitality and kindness. None the less, he is growing richer by unjust laws and unrighteous, tyrannical institutions; witness the neglected grounds of his poorer neighbors, and the smileless faces of his slaves.

The four mules canter on briskly, over the hard ground. Presently we turn into the *União e Indústria* road, the finest in Brazil, and formerly the only outlet of this region. It was built by a private company, who run on it a line of stages and freight-wagons. From the head of the bay of Rio de Janeiro, far into the province of Minas Geraes, the road is lined everywhere with rich coffee-plantations. The planters send their produce to Entre Rios, by this route; sometimes to Rio. Tolls are levied at intervals; with these, and the stages, the company reaps a rich harvest.

With a tinkling of bells and a patter of hoofs, the mule-trains pass on down the road. The animals walk in single file, each one with a pair of coffee-sacks slung from the rough pack-frame; behind them come the muleteers, mounted or on foot, and dressed in the picturesque, half-European costume of the Brazilian country-people. Nearly

all coffee is brought to the railroads in this manner. Formerly the rough paths did not allow of any better conveyance; now there are many good roads about Rio and São Paulo, but even when these are available, the planters cling to the old system; only a few use wagons.

Entre Rios is on a branch of the Dom Pedro Segundo Railroad, where the latter meets the União e Industria



The União e Industria Road, near Entre Rios.

road. From its situation, the little country-town promises to become a thriving inland city, the metropolis of this rich coffee region. The hills around are covered with plantations, each with its white-walled *fazenda*, like a castle. Oddly contrasted to these are the jaunty, modern-looking railroad station, and the attendant hotel, which might be a country-tavern in the United States. Mule-trains come to discharge their cargoes at the station; bags of coffee are



piled on the platform ; cars are being loaded with them ; a storehouse near by is half-filled with coffee, awaiting shipment. From the titled gentleman who passes you, to the dapper landlord, and the merest day-laborer, everybody in Entre Rios is dependent on coffee. The streets and buildings are fragrant with coffee ; people drink coffee at the restaurant, and quote coffee prices at Rio ; sell coffee, buy it, plant it, gather it, live and labor with very little thought beyond coffee, and the golden stores it will bring into their purses. The railroad was built to carry away the coffee ; that is its main business, almost its only income, for of other freight there is very little ; there are not many passengers, and ninety per cent. of these few are coffee-planters or coffee-traders.

It is a smooth, well-built route, passing up the picturesque valley, by coffee-plantations everywhere, until it joins the main line from São Paulo to Rio. Then the train winds up the mountains, passing through a score of tunnels, clinging to the sides of giddy precipices, peering up from cavern-like valleys, dashing on by forests so wild and luxuriant that they almost rival those of the Amazons. The brown gneiss rises above us in strange peaks, mountains of goodly size. *Itatiaia*, the highest of all, is capped with clouds ; its summit is almost ten thousand feet above the sea, so that snow is sometimes found there, and palms cannot grow among the rocks.

The mountains are grand and picturesque beyond all description ; the railroad, too, merits all the praise that has been lavished on its construction, for it is a triumph of engineering and workmanship. In fact, one who travels over the line is very apt to let his admiration run away with his judgment. For a moment, let us consider the road

aside from mountains and tunnels, on the question of bare utility.

The Dom Pedro Segundo Railroad is the longest, and, with perhaps one exception, the most important in Brazil. The total length of the main line is three hundred and sixty-five miles, and extensions are made almost every year. The road was commenced under the management of an incorporated company, interest of seven per cent. on the capital stock being guaranteed by the Government. But in building the first portion, it was necessary to cross the mountains near Rio, and this work was so difficult and expensive that, by the time one hundred miles was completed, the capital was entirely exhausted. In 1865 the Government bought the road of the stockholders, and it has since been built and managed as a branch of the imperial service. The road, as we have seen, is finely constructed; it is regular and safe; the stations and storehouses are well built and tasteful; the coaches are comfortable, and the ordinary traveller, at least, has no fault to find with the officials. On the invested capital, of rather more than forty million dollars, the Government realizes an average income of five and one-half per cent. yearly. So far, the result appears favorable; the road is well managed, and is a source of actual gain to the Government. Let us see if the practical results to the people are equally good.

Carl and I, coming down, about ninety miles, from Entre Rios, paid nine thousand nine hundred reis each for our tickets; say four dollars, by existing exchange. This is a high rate, but not an exorbitant one; we might have come second-class for one-half as much, and we can get "excursion tickets," good for both ways, at a reduced price. Our light satchels pay nothing, of course. But if we had trunks,

even small ones, we would have to pay as much for them as for ourselves. A fellow-passenger brought down five goats from Entre Rios. Nine thousand nine hundred reis he paid for himself; nine thousand nine hundred reis cost every one of the goats.

The regular tariff on coffee, from Entre Rios to Rio de Janeiro, is two thousand reis—say eighty-five cents per sack of one hundred and thirty-two pounds.\* Corresponding rates are charged from more distant places, and on branch roads. From certain portions of São Paulo, every sack of coffee that reaches Rio or Santos must pay four dollars, about one-third of the actual value in the Rio market. The regular freight charges, from Rio to New York, vary from twenty to seventy-five cents per sack.

Portions of São Paulo and Minas Geraes are well fitted for corn, and even wheat-growing, and it has often been suggested that these districts should supply Rio with bread-stuffs. But if São Paulo grain or flour were brought to Rio by railroad, it could never compete with American produce; nay, it is a demonstrable fact that it could be undersold by California grain, brought via Pacific R.R. to New York, and thence by sailing vessels to Rio.

The freight rates on the Dom Pedro Segundo Railroad are cheaper by one-third than those on any other railroad in Brazil. Only three or four lines are paying a reasonable percentage on their invested capitals, and many would have to be abandoned altogether but for the Government guarantee of seven per cent. annually. Of course, these roads are a heavy drain on the Government, and hence on the country, and the high freights neutralize any commensurate gain

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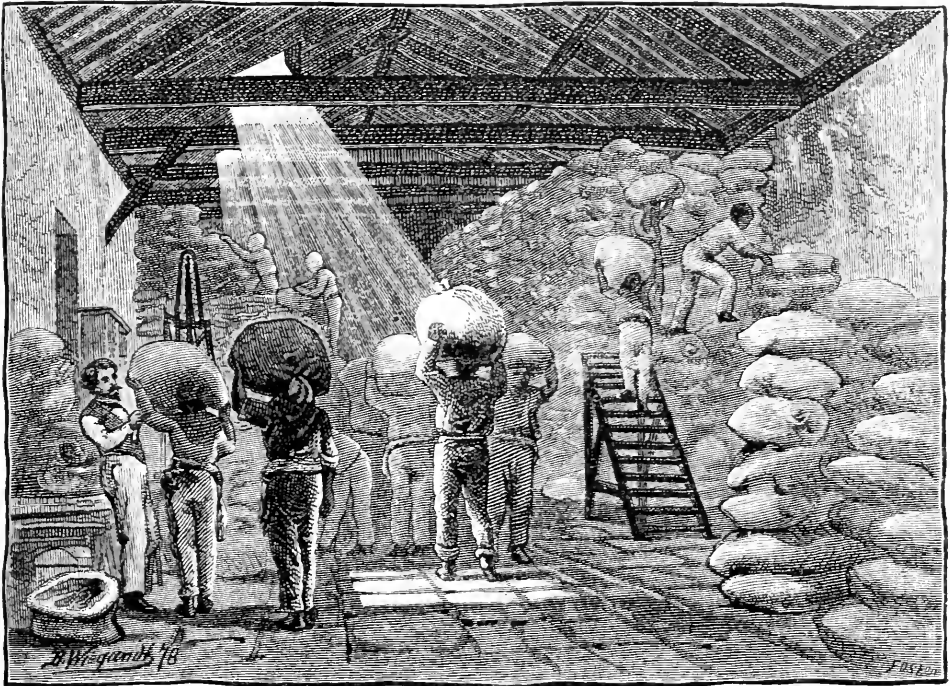
\* Sixty kilograms.

which might accrue to the districts through which they pass. Even the Dom Pedro Segundo Railroad is a doubtful advantage ; plans have more than once been discussed for bringing coffee to Rio by mule-trains ; and it is averred that it could be done at a lower rate than that demanded by the railroad.

Brazilians are crying out against these excessive tariffs, but the remedy is not very apparent. No public or private railroad can afford to carry freight at a rate that involves a dead loss, or leaves no margin for profits. Most of these roads were built with the idea of "opening up," or "developing" this or that region ; that is, the railroads were expected to bring prosperity to the country, but it was not always clear that the country could give prosperity to the railroads. If a steady stream of working immigrants had been flowing in, such reasoning might, *perhaps*, have been good. But Brazil gets few immigrants, and the quality of these few is not of the best ; the "development" of new districts means simply a spreading out of the present resources ; not an actual increase of production.

I believe that the mistake of Brazilian railroad schemes is that they do not consider the status of the population. In the northern provinces, a large proportion of the poorer people are non-producers ; that is, they cultivate only small tracts, and raise enough mandioca and corn for their own use, but almost nothing for sale. The large plantations are few and scattered ; the products—sugar, coffee, hides, etc.—are not enough to support a railroad, even with the present high freights. In the southern provinces, a large portion of the ground is taken up by rich coffee-planters, who cultivate only portions of the ground. Now, the utmost yield of coffee is four or five hundred pounds per acre ; if a railroad drains

one thousand square miles of coffee-land, it can carry away no more than three hundred million or four hundred million pounds of coffee annually. The same extent of wheat or corn land would produce at least ten times that weight of grain, and hence the railroad would get ten times as much freight. Practically, the discrepancy is still greater. The



Coffee Warehouse.

province of São Paulo, with its two draining railroads, probably does not furnish one-thirtieth of the freight that is supplied by an equal extent of our western grain land. Moreover, a great proportion of the population of the coffee-districts consists of slaves; their food is furnished by the plantations, and their clothes are few and scanty. To a plantation like that of Sr. S., the railroad brings nothing but the machinery and tools, with the furniture of the master's house, and a few bales of cloth for the two hundred slaves. An equal population in the United States would necessitate

shipments of coal, provisions, cloths, and a thousand articles of luxury ; all this would be clear gain to a railroad, and no slight addition to the outgoing freights.

No railroad, which depends for its prosperity on coffee alone, can afford to establish a low freight-tariff. Hence the extent of such a road must be limited, for ultimately a point will be reached from whence the freight will be so high that exportation will be practically prohibited. Brazilians talk of extending these railroads into Matto Grosso, eight hundred miles from the sea ; but to what purpose ? Coffee cannot be cultivated there, because it cannot be exported ; and there is no inflow of immigrants to establish grain-farms, as in our Western States. I believe that Brazil should let these central regions alone for the present ; she should seek to condense and enrich her coast population, and when new fields are required, there is the Amazons valley, an inexhaustible garden, with free water-communication to the ocean.

Sometimes the coffee is sold to traders at the railroad station. More commonly, the planters employ agents or factors at Rio de Janeiro, who sell the coffee, for a small commission, to the packers (*ensacadores*). To these latter belong the great storehouses in the northern and eastern part of the city. Here there are hundreds of negro porters, carrying the heavy sacks on their heads, or waiting at the street-corners for a job ; the most of these are slaves, but some are free, and earn from one dollar and fifty cents to two dollars per day. They work often with bare bodies and arms, showing their magnificently developed muscles ; but the severity of the labor is evinced by the diseased hips and inturned knees ; very few of these porters attain the age of fifty years.

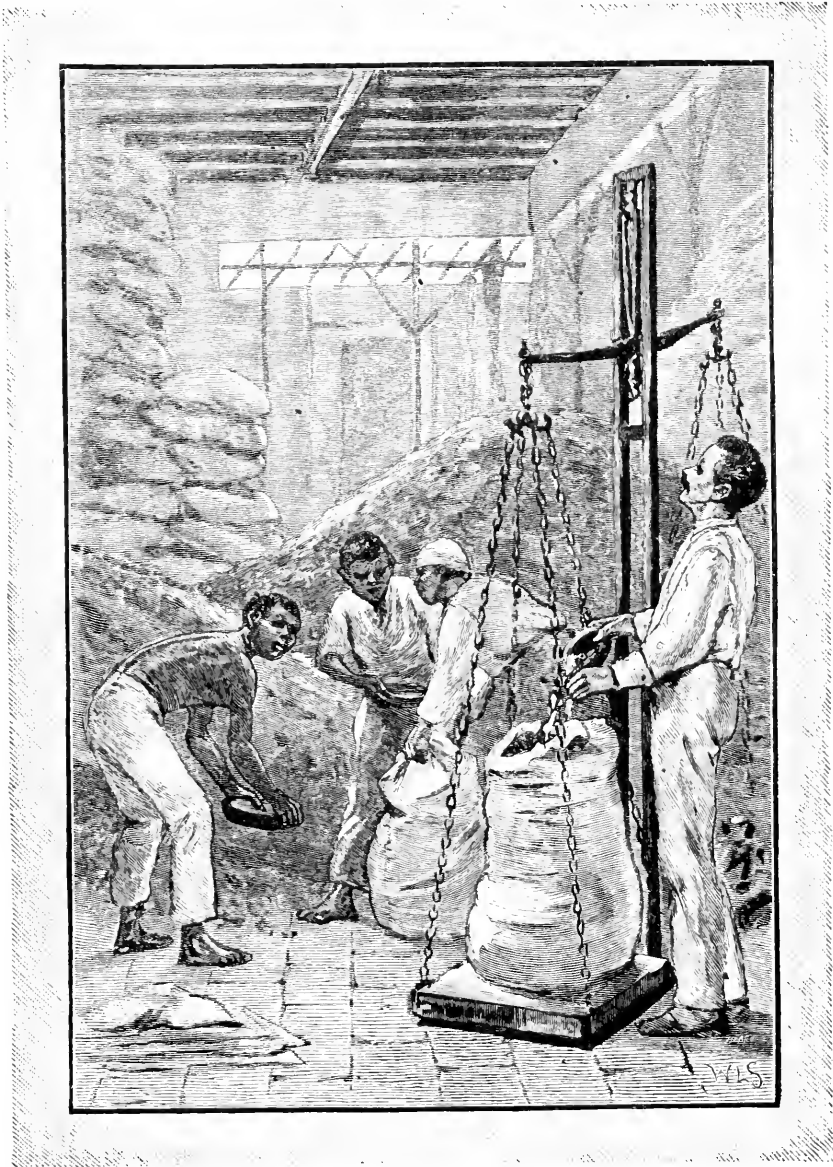
Carl and I find ready admittance to a storehouse, and the overseer takes pains to explain the different processes. It is

a great, barn-like room, level with the pavement, and substantially floored and walled. The coffee-sacks are piled on either side, each pile bearing a separate mark, and each sack distinguished by a number.

The incoming loads are brought from the railroad station in trucks or horse-cars ; as the porters bring them in, each bag is probed, and handfuls of grains are taken out for samples ; subsequently the coffee is emptied out on the floor, and repacked in coarse sacks for shipping, the weight being carefully adjusted to sixty kilograms, or a little over one hundred and thirty-two pounds. The old sacks bear the mark of the planters, from whom they came, and they are returned to their owners through the agent.

The packers are speculators, buying the coffee outright, and selling it when they can do so to best advantage ; but, of course, avoiding the expense of a long storage. From the packer, the coffee goes to the exporter, who is in correspondence with American or European houses, and who depends for his profits on the New York or Baltimore or London markets ; with him, also, the purchases must be a matter of speculation and calculation, for, during the ocean transit of from three to seven weeks, the markets may fluctuate greatly. Sometimes a high price can be looked for at an early day, and then the exporter makes his shipments by steamer to secure a quick passage ; but, at other times, the markets require delay, and sailing vessels get the preference. Some shipments are very large ; single houses frequently send off eight or ten thousand bags by one steamer. So you see all these streams centring around the wharves, with crowding drays, and lines of negro porters, and endless confusion evolving order ; the sacks are tossed on at the gang-plank, and packed securely in the hold, each with its

distinguishing mark and number, by which the cargoes will be separated at the other end of the route. So the whole immense business centres in a few dingy counting-rooms,



Weighing

where American or English merchants sit coolly, and control a million pounds of coffee with a stroke of the pen.

Rio and Santos are the two great coffee-ports of Brazil,



and the three provinces of Rio de Janeiro, São Paulo, and Minas Geraes produce nearly all the coffee that is sent out of the country. But, if the story runs truly, the northern provinces have the honor of the first introduction of coffee-plants. As is well known, the tree was a native of Arabia and Northeastern Africa, but it had been introduced into America in the early part of the eighteenth century. It is related that a Portuguese traveller, visiting Cayenne, about the year 1750, received a handful of coffee-berries from the wife of the French governor; the seeds from these were planted near Pará, and from them sprang the first coffee-trees in Brazil. At one time, many small coffee-orchards existed along the Amazons, and perhaps there was a small exportation from Pará; even now, a few trees are cultivated about the plantations and villages, and the seed derived from these is of a very superior quality—probably the best in South America. Yet it would be hard to convince a Brazilian that coffee can be successfully grown in the northern provinces.

The coffee-plant was first introduced into Rio in 1774, but it was long before it became an article of export. In 1800, ten sacks were sent out of this port, and in 1813, thirteen sacks. In 1817, the first large shipments took place, about sixty-four thousand sacks; from that time until 1851, the exportation increased steadily, reaching, in the latter year, over two million sacks, or three hundred and thirty million pounds. Since then, the increase has never been very great, and at times there has been a falling off in the yearly product. This want of growth is due, no doubt, to the ruinous system of cultivation, robbing the ground without enriching it; and to the high freight tariffs, and consequent uselessness of the interior lands. To these may be

added the export duties, which may eventually ruin the industry altogether. Latterly, other countries are turning their attention to coffee, and as soon as their young plantations are grown, they will compete with Brazil in the markets of the world. Mexico, especially, is likely to be a powerful rival, and if coffee is sent from her ports, free of duty, she may eventually force Brazil to diminish or remove her export tax, now the chief source of her revenue.

The good ship *City of Rio de Janeiro* passes by the Sugar-loaf rock, and steams out to sea, with forty-four thousand bags of coffee stowed in her hold: almost six million pounds. Through storm and calm she bears her rich freight; over the bar at Sandy Hook, and through the Narrows, and up to the busy wharves. There, with hurry and bustle, with rattling of pulley-chains and rumbling of wheels, the sacks are borne away to the warehouses, thence to be distributed east, west, north, south, to every State in the Union, to fifty thousand grocery stores, five hundred thousand families.

Now, as I sip my morning coffee and pen these concluding lines, my thoughts go back to the bright hill-sides, the tired slaves, the busy Rio streets, the good and evil of this great industry. From great to small; it is a little matter, this cup of coffee, but the prosperity of a great empire depends on it. So here I drink to the health of Brazil, to her political and social and commercial welfare, to the downfall of evil and the growth of all good, all noble impulses that are buried in noble hearts. *Viva o Brasil!*

## CHAPTER XVIII.

### MYTHS AND FOLK-LORE OF THE AMAZONIAN INDIANS.\*

THE Indians gather about their camp-fire ; the day's work is done, and supper is eaten ; weird shadows and lights dance over the trunks and branches and dark water beyond. Listen now, while they tell stories of the forest and its people :

#### STORY OF THE TORTOISE, THE MONKEYS, AND THE JAGUAR.

A *jabuti* (land-tortoise) came to an inajá palm-tree, where a troop of monkeys were eating the fruit.

"Hullo, monkeys !" said the jabutí, "what are you doing there ?"

"We are eating inajá-fruits," responded the monkeys.

"Throw me down some," begged the jabutí.

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\* This chapter is a provisional one ; at some future time I hope to publish the results of a critical and comparative study of the Amazonian myths and folk-lore ; a work begun by the lamented Prof. Hartt, but cut short by his untimely death. Meanwhile, I invite contributions from all friendly readers ; first, from South American travellers, any Indian stories that they may have collected from Guiana to Paraguay ; second, from Old World travellers, and those familiar with our western Indians, any stories that bear a distinct resemblance to those I give ; third, from planters and residents in our Southern States, *any* negro myths or stories not manifestly historical. Stories should be given as nearly as possible in the original words, and time and place of collection should be specified ; full credit will be given to the collector. Communications can be addressed to care of American Geographical Society, 11 West Twenty-ninth St., New York.

"No," said the monkeys; "we will bring you up here, and you can eat all you want." So they ran down to the ground, took the jabutí by the legs, and carried him up to the top of the palm-tree: there they put him on the bunch of fruit, and so left him.

The jabutí ate his fill, and began to look about him for a means of getting down. Just then a jaguar passed under the tree, and saw the jabutí sitting high over his head. "Hullo, jabutí!" said the jaguar, "what are you doing there?"

"I am eating inajá-fruits," answered the jabutí.

"How did you get up there?" inquired the jaguar.

"I climbed up."

"O, jabutí, throw me down some of the fruit."

"All right," said the jabutí; "if you will place yourself right under me, I will throw down some fruit for you."

So the jaguar stood directly under the bunch; whereat the jabutí slipped off and fell on the jaguar's head, and killed him.\*

#### STORY OF THE TORTOISE WHO DECEIVED THE JAGUAR AND KILLED HIM.

A jaguar saw a jabutí just as he was disappearing into his hole. He reached after him, and caught him by the hind-leg, but the jabutí held fast. "Oh, you foolish fellow," he cried, "you think you have got me, but you are only holding a root." Then the jaguar let go, but in trying to reach still farther he got hold of a real root, to which the jabutí tied his paw; then, coming out of the hole another way, he killed the jaguar by biting him behind.

There are many variants of this story. In one, quoted

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\* Prof. Hartt (*Amazonian Tortoise Myths*, p. 27) gives a somewhat different ending for this story.

"'Why don't you come down?' asked the jaguar. The tortoise answered that he was afraid lest he should be killed. Now the jaguar wanted to make a meal of the tortoise, so he said: 'Don't be afraid! Jump! I will catch you!' The tortoise leaped down, but the jaguar missed his aim, and the tortoise, striking him on the head, killed him."

Prof. Hartt collected this version at Santarem, where mine also was obtained.

by Prof. Hartt, \* “ the jabutí is represented as spreading out his *tauari* (bark cigarette-wrappers) to dry in the sun, before the mouth of the hole. The jaguar caused a wind to blow the *tauari* about, hoping, in this way, to entice out the tortoise, but the latter, too wary, sent out another animal to look after the *tauari*, and himself escaped.” Hartt also quotes a version obtained by Dr. Silva de Coutinho on the Rio Branco : “ Here, however, the jaguar left a toad to guard at the mouth of the burrow of the tortoise. The jabutí, seeing him, asked why his eyes were so red and swollen, and persuaded him to rub them with a certain plant, which, being caustic, blinded him.”

#### ORIGIN OF THE TORTOISE'S SHELL.†

A hunter, watching behind a tree for deer, heard a noise behind him ; he turned, and saw a jabutí near by, with a great white shell on his back ; on looking closer he found that it was a jaguar's skull. The jaguar had seized the jabutí and bitten into his back ; but there his teeth had stuck fast, and so he died, and, in time, the jabutí went away with his skull. And ever since, the jabutí has carried the jaguar's skull on his back.

#### HOW THE TORTOISE OUTRAN THE DEER.‡

A jabutí met a deer and asked : “ O, deer, what are you seeking ? ” The deer answered : “ I am out for a walk, to see if I cannot find something to eat ; and, pray, where are you going, tortoise ? ”

“ I am also out walking ; I am looking for water to drink.”

“ And when do you expect to reach the water ? ” demanded the deer.

“ Why do you ask that question ? ” returned the tortoise.

\* Op. cit. p. 29.

† This story was obtained from a white planter, and it is evidently incomplete.

‡ I quote Prof. Hartt's words for this story, as being better than the version, substantially the same, that I find in my note-book. The story is very common all over the Amazons.

"Because your legs are so short."

"Well!" answered the tortoise, "I can run faster than you can. If you are long-legged you cannot run as fast as I."

"Then let us run a race!" said the deer.

"Well!" answered the tortoise, "when shall we run?"

"To-morrow."

"At what time?"

"Very early in the morning."

"*Eng-éng!*" (yes) assented the tortoise, who then went into the forest and called together his relations, the other tortoises, saying: "Come, let us kill the deer!"

"But how are you going to kill him?" inquired they.

"I said to the deer," answered the tortoise, "let us run a race! I want to see who can run the fastest. Now I am going to cheat that deer. Do you scatter yourselves along the edge of the campo, in the forest, keeping not very far from one another, and see that you keep perfectly still, each in his place! To-morrow, when we begin the race, the deer will run in the campo, but I will remain quietly in my place. When he calls out to me, if you are ahead of him, answer, but take care not to respond if he has passed you."

So, early the next morning, the deer went out to meet the tortoise.

"Come!" said the former, "let us run."

"Wait a bit!" said the tortoise, "I am going to run in the woods."

"And how are you, a little, short-legged fellow, going to run in the forest?" asked the deer, surprised.

The jabutí insisted that he could not run in the campo, but that he was accustomed to run in the forest; so the deer assented, and the tortoise entered the wood, saying: "When I take my position I will make a noise with a little stick, so that you may know that I am ready."

When the tortoise, having reached his place, gave the signal, the deer started off leisurely, laughing to himself, and not thinking it worth his while to run. The tortoise remained quietly behind. After the deer had walked a little distance, he turned around and called out: *U'i yauti!* (Hullo, tortoise!) when, to his astonishment, a tortoise a little way ahead cried out: "*U'i suasú!*" (Hullo, deer!) "Well," said the deer to himself, "that jabutí does run fast!" whereupon he walked

briskly for a little distance, and then cried out again, but the voice of a tortoise still responded far in advance.

“How’s this?” exclaimed the deer, and he ran a little way, until, thinking that he surely must have passed the tortoise, he turned about, and called again; but “*U’i suasú!*” came from the edge of the forest just ahead.

Then the deer began to be alarmed, and ran swiftly until he was sure that he had passed the tortoise, when he stopped and called; but a jabutí still answered in advance. On this, the deer set off at full speed, and, after a little, without stopping, called to the tortoise, who still from ahead cried: “*U’i suasú!*” He then redoubled his forces, but with no better success, and at last, tired and bewildered, he ran against a tree and fell dead.

The noise made by the feet of the deer having ceased, the first tortoise listened. Not a sound was heard. Then he called to the deer, but received no response. So he went out of the forest and found the deer lying dead. Then he gathered together all his friends and rejoiced over the victory.

I once heard an Indian relate this story with a different conclusion. The deer gave up the race to the jabutí. The deer then offered to have a trial of strength with the jabutí. “We will take a *sipó*” (vine-stem), said he; “you can fasten one end to your hind-leg, and I will fasten the other end to my hind-leg, and we will try to see which can pull the other along.” The jabutí agreed: so they got a long sipó, and fastened it to their hind-legs as agreed; but, while the deer was walking away from him, the jabutí untied his end from his leg, and fastened it to a tree. When the deer began to pull and tug, and could make no advance, he thought to himself: “This won’t do; the jabutí is stronger than I!” So he asked a whale\* to help him; but both to-

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\* *Baleo*: whales, of course, are not known on the Amazons, but the Indians have heard of them.

gether could not pull away the supposed tortoise, and they finally died from exhaustion.

The Indians frequently tack their stories together, and, to preserve their original characters, often vary the form absurdly, as in this tale, in which the deer asks a whale to help him. Clearly, the above ending is derived from another story, which Prof. Hartt has given in full :

HOW THE TORTOISE PROVOKED A TRIAL OF STRENGTH BETWEEN  
THE TAPIR AND THE WHALE.

One day a jabutí went down to the sea to drink. A whale saw him, and called out : “ What are you doing, jabutí ? ” To which the latter responded : “ I am drinking, because I am thirsty.”

Then the whale made sport of the tortoise, because of his short legs, but the latter replied : “ If my legs are short, I am stronger than you, and can pull you on shore.”

The whale laughed, and said : “ Let me see you do it ! ”

“ Well,” said the jabutí, “ just wait until I go into the forest and pull a *sipó*.”

Away went the tortoise into the forest, and there he encountered a tapir, who demanded : “ What are you looking after, jabuti ? ”

“ I am looking after a *sipó*.”

“ And what are you going to do with the *sipó* ? ” asked the tapir.

“ I want to pull you down to the sea.”

“ *Ya!* ” exclaimed the tapir, surprised. “ I’ll pull you into the forest, and what’s more, I’ll kill you ; but never mind, let’s try who may be the stronger ! Go get your *sipó* ! ” The tortoise went off, and presently came back with a very long *sipó*, one end of which he tied around the body of the tapir.

“ Now,” said the jabutí, “ wait here until I go down to the sea. When I shake the *sipó*, run with all your might into the forest.” Having attached one end to the tapir, he dragged the other down to the sea, and fastened it to the tail of the whale. This accomplished, he said, “ I will go up into the forest, and when I shake the *sipó*, pull as hard as you can, for I am going to draw you on shore.”



The jabutí then went into the wood, midway between the whale and the tapir, shook the sipó, and awaited the result. First the whale, swimming vigorously, dragged the tapir backward to the sea, but the latter, resisting with all his might, finally gained a firm foothold, and began to get the better of the whale, drawing him in toward the shore. Then the whale made another effort, and, in this manner, they kept tugging against one another, each thinking the tortoise at the other end of the sipó, until at last, both gave up the struggle from sheer exhaustion.

The tortoise went down to the shore to see the whale, who said : “ Well ! you are strong, jabutí ; I am very tired.”

The tortoise then untied the sipó from the whale, and having dipped himself in the water, presented himself to the tapir, who thought the tortoise had been pulling against him in the water.

“ Well, tapir,” said the jabutí, “ you see that I am the stronger.”

The tortoise then released the tapir, who went off saying : “ It is true, jabutí, you are indeed strong ! ” \*

#### STORY OF THE JAGUAR WHO WANTED TO MARRY THE DEER'S DAUGHTER, BUT WAS CUT OUT BY THE COTIA.†

A jaguar had a mind to marry ; he fell in love with the daughter of the deer, and one day he asked, and obtained, the deer's consent to the match. Now the jaguar had a friend, the cotia. So to the cotia's house he ran, in great joy, to tell the news, and boast of his good luck. “ See how fortunate I am ! ” he cried, “ I am going to marry the deer's daughter, the prettiest girl of the forest, and you, my friend, shall attend the wedding ! ”

“ You are indeed happy,” responded the cotia. “ I congratulate you ! ” But in his heart, he was resolved to cut the jaguar out. So, when the jaguar was gone, he ran to the deer's house, and asked for his daughter in marriage.

\* In a variant, the tapir and whale are replaced by the jaguar and a great water-snake ; in another variant, the *kad-póra*, a mythical being, takes the place of the tapir.

† The *Cotia* (*Dasyprocta*, sp. var.), called *agouti* in the West Indies, is a long-legged, terrestrial rodent, very common in the Amazonian woods. In Indian mythology he is a mischievous person, who plays pranks on the jaguar.

"I would be very happy to give her to you," said the deer, "but she is already engaged to the jaguar, who asked her of me but now."

"Poh, poh!" exclaimed the cotia, "the jaguar isn't good enough for her; he is only a miserable old dotard, the worst beast in the woods, and the weakest; why, I could make him carry \* me, for all he is so big!"

"Say you so?" exclaimed the deer. "Well, cotia, if you can make the jaguar carry you, you shall have my daughter." So the cotia went away and awaited his opportunity.

When he knew that the jaguar was going to the deer's house, he went and lay down in the path where the jaguar must pass; he had a bandage round his head, and he pretended to be very ill. Presently the jaguar came by and saw him.

"Hullo, cotia!" said he, "what are doing there?"

"I am lying in the woods," said the cotia, "because I am very ill."

"I am going to see my betrothed," said the jaguar; "get up and come along with me."

"Indeed I would like to," sighed the cotia, "but, as you see, I am quite unable to walk."

"Well," said the jaguar, "if you will come with me, I will carry you."

"Very good," responded cotia, "if you will carry me I will go." So the jaguar took the cotia on his back, and walked off with him.

Presently the cotia slipped off on the ground. "Oh, cotia!" said the jaguar, "why did you fall off?"

"I fell off," answered the cotia, "because I'm so weak that I can't hold on."

"Well," said the jaguar, "I will tie you on with sipó." So the jaguar got a sipó, and tied the cotia fast to his back, and so went on. Presently the cotia began to strike the jaguar with his fore-feet.

"Hullo!" exclaimed the jaguar, "what are you striking me for?"

"I am striking you," said the cotia, "because you haven't given me a switch; every one who rides should have a whip." †

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\* *Montar*: The cotia says that he can ride the jaguar.

† The idea of horsemanship here introduced is apparently a modern interpolation.

The jaguar, willing to humor his friend, gave him a switch ; he used this very gently until they neared the house of the deer, when he began to whip with all his might. The jaguar, mightily enraged, tried to shake him off, but the sipó held him fast, and together they ran through the forest. The cotia waited until he saw a hole ; then he gnawed the sipó, and slipped off, and so got into the hole before the jaguar could seize him.

The jaguar watched at the mouth of the hole for a long time, but at length he became very tired and thirsty ; so he said to an owl : “ O owl ! will you watch this hole for me while I go and get some water ? ”

“ Yes,” said the owl, “ I will watch it for you, and nothing shall escape.”

The jaguar went off to drink, and the owl sat watching the hole. Presently the cotia peeped out, and saw the two great eyes staring at him ; he threw a handful of sand into the owl’s face, and blinded him, and, while the latter was rubbing his eyes, the cotia got out of the hole and ran away.

Just then the jaguar came back. “ O owl ! ” said he, “ where is the cotia ? ”

“ Alas ! ” answered the owl, “ he threw sand into my eyes, and blinded me, and then ran away ! ”

After that the jaguar could never catch the cotia, and the mischief-maker married the deer’s daughter, because he had made the jaguar carry him, as he had promised.\*

#### STORY OF THE COTIA WHO PLAYED TRICKS ON THE JAGUAR, AND OUTWITTED HIM.

A cotia began to run through the woods as fast as he could go. Presently he met a jaguar.

“ Hullo, cotia,” cried the jaguar, “ where are you going so fast ? ”

“ Why ! ” said the cotia, “ don’t you know ? There is a great storm coming up, that is blowing away all the animals of the forest ; I am running as fast as I can to my hole, where I shall be safe.”

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\* Compare the latter part of the story (evidently tacked on), with the variant of a preceding story, where the jaguar sets a toad to watch a tortoise’s hole.

“Wait a minute!” exclaimed the jaguar, in great alarm. “What is going to become of me? I have no hole to go to, and the wind will blow me away! O my friend! tie me to a tree that I may not be blown away!”

“Well,” said the cotia, “I will tie you.” So he tied the jaguar fast to a tree, and went away, laughing to himself at the other’s stupidity.

After a day, a white ant came and gnawed the sipó, and set the jaguar free. Meanwhile, the cotia, who had been running around and enjoying himself, took it into his head to see what had become of his prisoner. He crept softly up to the tree. Just at this moment the jaguar was freed by the white ant.

“O copim!” (white ant) cried the jaguar, “O king of the copins! I will always be grateful to you for this; come to my house whenever you like, and I will feed you on the best that I have, and give you the best bed, and treat you like a king.”

The cotia, when he heard this, resolved to cheat the jaguar again. He found a bee’s nest in a tree, and rolled himself in the honey; then he went to a white-ants’ nest, and shook a great number of the insects out on the ground, rolling among them, until they stuck to the honey and he was covered all over with them. Thus disguised, he went boldly to the jaguar’s house. As he came up, the jaguar’s son saw him, and cried to his father. “Oh, father! here is the king of the copins, all covered with little copins!”

Then the jaguar hastened out to meet his guest, and invite him in; he made a fine dinner for him, and waited on him all day, and, when night came, he gave him the best place to lie in; so the cotia lay down and went to sleep.

About midnight, a heavy rain came up. “O my son!” said the jaguar, “go and look at the king of the copins, and see if he is getting wet.”

Now the cotia had a dry place, and he slept well; only there was one little hole in the thatch, and here the rain trickled down and washed the honey and copins from his body, so that the red fur appeared. The jaguar’s son saw it, and ran back to his father, exclaiming, “Oh, father, this is not the copin-king, at all, but that wicked old cotia!”

Then the jaguar sprang up in great rage, and finding the cotia still asleep, he seized him and bound him fast to a tree.

“What shall I do with this mischief-maker?” he exclaimed. “Tomorrow morning I will take him to the river, and throw him in and drown him!” So he left his son to watch the prisoner, and went off to sleep again.

Presently the cotia began to dance and sing, and make himself very joyful.

“Hullo, cotia!” said the jaguar’s son, “what are you laughing about?”

“I am laughing,” responded the cotia, “because I am so glad that your father is going to throw me into the river; that is just what I like; I was born to swim. Now, if he were going to throw me into a brier-bush (*Rabo de camelião*), I would be very sad, because I couldn’t get out of that, and I would die.

In the morning, the jaguar’s son told his father all that the cotia had said; so the latter, instead of throwing his enemy into the river, threw him into a brier-bush; whereat the cotia ran away laughing.

I have a variant of this myth, in which an Old World lion (*leão*) takes the place of the jaguar. The cotia told the lion that a great storm was coming, and tied him fast to a tree. Here the lion remained for two days, until he became very hungry and stiff. A jaguar came along, and said:

“Hullo, lion! What are you doing there?”

“I am tied fast to this tree,” answered the lion, and he begged the other to unfasten him.

“Who tied you?” asked the jaguar.

“The cotia,” answered the lion; whereat the jaguar laughed loud and long. However, he untied the prisoner, and together they arranged a scheme of revenge on the cotia. It happened that there was but one spring in that forest; the lion and jaguar gathered all their friends, and watched this spring day and night, so that the cotia could not come down to drink.

After some days the cotia became very thirsty. He said to himself : “ What shall I do ? If I go to the spring the lions and jaguars will kill me, and, if I remain here, I shall die of thirst ! ”

Just then an old man (a black man, said my pundit) came along with a jar on his head. “ I will see if I can get some water from that jar,” thought the cotia.

He ran ahead of the man, and lay down in the path. Presently the man came up. “ Hullo ! ” said he, “ here is a dead cotia ! ” and he shoved the animal to one side with his foot, and went on.

As soon as he was out of sight, the cotia jumped up, and ran on through the woods until he was in front of the man again ; then he lay down in the path, as before.

“ Hullo ! ” said the man, coming up, “ here’s another dead cotia ! ” and he kicked the animal out of his path.

Again the cotia ran ahead of the man, and lay down in the path. “ Hullo ! ” said the man, “ this makes three dead cotias that I have seen ; now if I see another one I will go back and get them all.”

Once more the cotia repeated his trick. “ Hullo ! ” said the man, “ here’s another dead cotia ! Now I will go back and get the others, and carry all four home.”

With that, he put down his jar, and went to look for the other dead cotias. As soon as he was gone, the cotia jumped up, and thrust his head into the jar ; instead of water he found only molasses. So he tipped the jar over and let the molasses flow out on the ground : he rolled himself, first in this, and then among the dried leaves, and then in the molasses again ; and so on, until the leaves covered him to the thickness of several inches. Thus disguised, he went boldly to the spring and drank ; the jaguars and lions, who had never before seen such a strange animal, were seized with great fear, and did not dare to touch it. When he had drunk his fill, the cotia ran to the top of a hill, and shook off the leaves.

“ O jaguars ! ” he cried, “ you are all good-for-nothings ! You can’t catch anybody ! ”

The lions and jaguars heard him, and gave chase in great rage : but he easily escaped them, and ever after that, he outwitted all his enemies.

To show the almost infinite changes that are rung on these stories, I quote the following series, given by Dr. Couto de Magalhães : \*

BE CAREFUL TO WHOM YOU DO GOOD DEEDS.

One day the fox † was taking a walk, when he heard a growl—ugh! ugh! ugh! “What is that?” he said to himself; “I will go and see.”

The jaguar saw him and said : “I came into this hole a long time ago; I grew large, and now I can’t get out. Will you help me to roll away this stone?”

The fox helped him; the jaguar got out, and the fox asked : “What will you pay me now?”

The jaguar was very hungry. “I am going to eat you!” he answered. And he caught the fox and asked : “How is a good deed paid for?”

The fox answered : “Good is repaid with good. Near by there is a man who knows all things; let us go and ask him.”

They crossed to an island; the fox told the man how he had got the jaguar out of the hole, and how the jaguar, in payment, wanted to eat him.

The jaguar said, “I wanted to eat him because good is repaid with evil.”

“It is well!” said the man; “let us go and see the hole.” So they went, all three. Arrived there, the man said to the jaguar : “Go in; I want to see how you lay.”

The jaguar went in: the man and the fox rolled back the stone, and the jaguar was a prisoner again. “Now,” said the man, “you will learn that good deeds should be repaid with good!” So the jaguar was left, and the others went away.‡

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\* O Selvagem, p. 237. In this excellent work a number of the stories are given in modern Tupí, with Portuguese interlined translations. The place of collection is not stated.

† *Micura*: Opossum?

‡ This part of the story resembles one of the Arabian Nights’ tales, where the genius is put back into the box from which he had emerged.

The fox laid himself in the road where the man was to pass, and feigned himself dead. The man came, and said : " Poor little fox ! " Then he made a hole and buried him, and so went his way.

The fox ran through the woods, got before the man, and lay down in the road again, feigning death. When the man came up, he said : " Another dead fox ! Poor thing ! " So he pushed him out of the road, covered him with dead leaves, and went on.

The fox ran through the forest again, lay down in the road, and feigned death. The man came up and said : " Who can have killed so many foxes ? " With that he pushed the fox out of the road, and went on.

Once more the fox ran ahead, and feigned himself dead in the road. The man came up and said : " May the devil run away with these dead foxes ! " and he took the fox by the tail and threw him into the bushes.

Then said the fox : " We should never tire those who do good deeds to us."

Now the jaguar had got out of the hole. He said to himself : " I will go and catch the fox ! " As he went on through the forest he heard a noise—*chaú ! chaú ! chaú !* It was the fox who was pulling a *sipó* (vine).

When the fox saw the jaguar, he said to himself : " I am lost ! the jaguar will eat me now ! " So he said to the jaguar : " A great wind is coming ! Help me to pull *sipó*, that I may tie myself to a tree, or the tempest will carry me away ! "

The jaguar helped him to pull the *sipó*, and said : " Tie me first, for I am the larger, and the wind will carry me away before it carries you ! "

So the fox told the jaguar to embrace a great tree ; he tied his hands and his feet, and said : " Now you may stay there, and I'm going away ! "

In the course of time, the white ants came and began to make a house on the tree to which the jaguar was tied. The jaguar said : " Ah, *copins* ! If you were good people you would eat this *sipó* with which I am tied, and let me free ! "

The *copins* answered : " If we free you, you will kill us ! "



"No," said the jaguar, "I will not kill you." So the copins worked all night, and in the morning the jaguar was free. But he was hungry. So he ate the copins, and went on after the fox.

The fox, being afraid, only walked at night. The jaguar laid a snare, cleared the road where it was, and, when the fox came up, said to him : "I cleared our road because of the spines."

The fox was suspicious of this. So he said : "Go on before me in the path!" The jaguar went before in the path, and broke the snare. The fox leaped back and fled.

The sun dried all the rivers, and only one pool was left.

The jaguar said : "Now, I will catch the fox when he comes to drink!" The fox, when he came, looked about him and saw the jaguar ; he could not drink. So he went away wondering to himself what he should do.

There came a woman along the road with a pot of honey (or molasses) on her head. The fox lay down in the road and feigned death ; the woman pushed him out, and went on. The fox ran on through the woods, came out into the road before the woman, and feigned to be dead ; the woman pushed him aside, and went on. Once more the fox ran on through the forest, lay down in the road, and feigned death. The woman came up and said : "If I had brought the other two I would have three now!" So she set the pot on the ground, put the fox in her basket, left it there, and went on to get the other foxes. Then the fox smeared himself over with the honey, rolled in the green leaves, and went to the pool to drink. As he entered the water and drank, the leaves fell off ; the jaguar knew him, but as he was going to spring at him the fox fled. When he was thirsty again, he beat a gum-tree, and smeared himself with the gum which flowed out ; then he rolled in dry leaves, and went to the pool.

"Who are you?" asked the jaguar.

"I am the dried-leaves animal."

The jaguar said : "Go into the water, come out again, and after that you may drink!" So the fox went into the water ; but the leaves stuck to the gum and did not float off ; he came out, and then drank ; and thus he did until the rain came on again.

The jaguar said to himself : "Now I will feign to be dead! The

animals will come to see if it is true, and with them will come the fox ; then I can catch him ! ”

All the beasts knew that the jaguar was dead ; they went to his den, and cried : “ The jaguar is dead, thanks be to God ! Now we can walk in peace ! ”

The fox came, but did not go in : “ Has he groaned ? ” he asked.

“ No,” said the animals.

“ When my grandfather died, he groaned three times ! ”

The jaguar heard, and groaned three times. The fox heard him, and laughed aloud. “ Who ever heard of one’s groaning after death ? ” he cried.

So he ran away, and to this time the jaguar has never been able to catch him, because the fox is very cunning.

I think that the foregoing examples are enough to show :

First : That the stories are made up of short tales, which in themselves are very simple and complete.

Second : That these short stories may be strung together to any extent, with such variations as are necessary to preserve a general loose connection between them ; the order is nothing.

Third : That the parts may be changed from one animal to another, but almost always preserving certain characters for each ; thus, the jaguar is big and cruel and stupid—a bully ; the tortoise is a weaker animal, which conquers by astuteness ; the cotia is mischievous ; and so on.

Fourth : That there are many modern interpolations, brought in as the fancy of the narrator may suggest, but without disturbing the general point of the shorter tales.

All these animal stories are found among the Indians ; some of them, at least, extend from Paraguay to Guiana, and from Pernambuco to Bolivia : \* as far, in fact, as the Tupi

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\* *E. g.*, the story of the tortoise running a race with the deer.

language and its dialects extend. They are recounted in the interior, about camp-fires, during long night-voyages, wherever the people have no outside objects to interest them. On the Lower Amazons the language used is generally Portuguese; elsewhere it is Tupí, or Mundurucú, or Guarany. Judging from these facts alone, one is led to suppose that the stories are indigenous. Yet there is an undoubted, and, in many cases, a very close resemblance between them and negro, or Old World tales. Two or three examples will show this:

The following story, found among the negroes of South Carolina, was published in the *Riverside Magazine* for Nov., 1868; it is quoted by Prof. Hartt: \*

“Once upon a time, Brudder Deer and Br. Coutah (Tortoise) was courtin’, and de lady bin lub Br. Deer more so dan Br. Coutah. She did bin lub Br. Coutah, but she lub Br. Deer de mostest. So de young lady say to Br. Deer and Br. Coutah both, dey must hab a ten-mile race, and de one dat beats, she will marry him.

“So Br. Coutah say to Br. Deer: ‘You has got longer legs dan I has, but I will run you. You run ten miles on land, and I will run ten miles on water!’

“So Br. Coutah went an’ git nine of his family, an’ put one at ebery mile post, and he himself, what was to run wid Br. Deer, was right in front of de young lady’s door, in de broom grass.

“Dat morning at nine o’clock, Br. Deer met Br. Coutah at de first mile post, wha de was to start from. So he call: ‘Well, Br. Coutah, is you ready? Go long!’ As he git on to de next mile post, he say: ‘Br. Coutah!’ Br. Coutah say: ‘Hullo!’ Br. Deer say: ‘You dere?’ Br. Coutah say: ‘Yes, Br. Deer, I dere too.’

“Next mile post he jump, Br. Deer say: ‘Hullo, Br. Coutah!’ Br. Coutah say: ‘Hullo, Br. Deer, you dere too?’ Br. Deer say: ‘Ki! It look like you gwine for tie me; it look like we gwine for de gal tie!’

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\* Op. cit., p. 12.

“When he gits to de nine-mile post he tought he git dere first, 'cause he mek two jump; so he holler: ‘Br. Coutah!’ Br. Coutah answer: ‘You dere too?’ Br. Deer say: ‘It look like you gwine tie me.’ Br. Coutah say: ‘Go 'long, Brudder, I git dere in due season time,’ which he does, and wins the race.” \*

Here is one of the most widespread of the Indian stories, almost exactly repeated in bad negro-English. The following tale, from Upper Egypt, is an equally close repetition of the cotia (or fox) and jaguar story:

“A man is carrying a basket of fowls to market. A fox, who is anxious to get at the fowls, lays himself down on the road, and pretends to be dead. The man with the fowls is surprised, but passes on. Somewhat farther on the man finds a second fox lying dead, and, farther on again, a third. ‘Now,’ thinks the man, ‘three foxes are worth the trouble of taking with me to sell;’ so he sets down his basket, and goes to pick up the foxes. Of course, he finds nothing, and when he gets back to his basket, the fowls have disappeared.” †

The Rio negroes, who have never seen the Indians, tell many of the animal stories with greater or less variations. The question arises, may not these tales have been introduced by the negroes?

To my mind, this is still an open question. If the stories were found only along the coast, one might readily insist on their African derivation. But they are repeated in remote provinces, among half-wild tribes, who hardly ever see the negroes, and whose language is utterly unlike the common negro-Portuguese. Many of the tortoise myths—notably the story of the race—are told by the Mundurucú Indians, the majority of whom cannot speak Portuguese.

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\* Prof. Hartt shows that very similar stories are found in Europe, and in Siam.

† Klunzinger: Upper Egypt, its People and its Products, p. 401.<sup>1</sup> The above story was brought to my notice by Mrs. J. C. Smith, of Manlius, N. Y., to whom I was relating the Amazonian version.

In any case, the stories may have been enriched and varied by negro additions; the introduction of a lion in the cotia story, while it means nothing in itself, shows that the narrator had heard of lions, probably from the slaves. So the fox story may have been introduced entire, and tacked to indigenous myths. Observe, however, that nearly all these stories, be they American or African, have their counterparts in the Orient. The story from Upper Egypt was related in Arabic, and, very likely, it exists in Arabia and Turkey.

The myths that follow have an altogether different character from the animal stories. They are the goblin tales, which one hears from old women, as they sit by the fire, hugging their knees with their withered arms, and half speaking, half chanting, their lugubrious sentences. So I have seen and heard them often, and almost fancied that I saw the goblins themselves, among the shadows, under the darkened eaves:

#### THE BIRD OF THE EVIL EYE.

Far away in the thickest forest lives the *Tucano-yúa*, Bird of the Evil Eye. It has a nest in a hollow tree; from a crevice under the branches, it surveys the ground beneath; if any animal passes near, the bird has but to look at it, and the evil eye does its work. All around, the ground is white with bones; the bird feeds on its victims, and not even the strongest can escape it.

Long ago a hunter, straying farther than was his wont, found this tree, with the bones lying white about it. As he looked, he saw the *tucano-yúa* peering out; but the bird did not see him, and, ere it could turn its head, the hunter shot it, and it fell to the ground. The man approached the body carefully, walking so that he did not pass before the eyes; then, with his knife, he cut off the bird's head, wrapped it in a cloth\* and put it into his hunting-pouch. Ever after that, when this

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\* "A handkerchief," said the narrator.

man saw a deer or paca or tapir, he held the tucano-yúa's head so that the bill was pointed toward the game, which instantly fell dead. But he took care never to turn the bill toward himself.

The man's wife wondered much at her husband's success in hunting ; she questioned him often to discover the reason for this good luck ; but he answered, always : " This is no business of yours ; a woman cannot know of these things." Still she was not satisfied ; day after day she watched her husband stealthily. And once, when the man and his wife went with a party to the woods, she watched more closely ; when a deer or cotia passed by, she saw that her husband took something from his hunting-pouch and held it toward the game, which instantly fell dead. The woman's curiosity tempted her to find what this strange weapon could be. It chanced, after dinner, that the man went to sleep on the ground. The woman approached him softly, opened his hunting-pouch, and took out the head of the tucano-yúa. Turning it about, she tried to recall her husband's actions.

" He held it *so*," she said to herself, " with the bill turned toward the game." But as she spoke, she had carelessly turned the head against her husband's body, and in an instant she saw that he was dead. Overcome with fear, she started back ; but in so doing she turned the deadly beak toward herself, and she, also, fell dead.

#### BOIA-ASÚ, THE GREAT WATER-SNAKE.

The Indians, almost universally, believe in the existence of an enormous water-serpent, which they call *Boia-asú* or *Mãe d'Água*, Mother of the Water. The fishermen ascribe to it the appearance or disappearance of small lakes and channels ; the *igarapés*, they say, are the tracks of the snake's body ; when he leaves a lake, it dries up, or is overgrown with grass. Sometimes the *Boia-asú* figures in the animal or goblin tales, but without any fixed characters.

#### THE FLAT-FEET.

The Indians of Santarem tell of a dwarf\* that lives on the hot sandy campos, near the city : it has only one foot,

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\* I never heard any special name for it.

but that is so large and flat that the dwarf uses it as a parasol ; when the sun is hot, he lies down on his back and holds his foot over his head for shelter.

Possibly this myth was introduced by the Portuguese, though I obtained it from the Indians. Concerning the Old World version, Prof. H. H. Boyessen writes me :

“The legend of people who have such large feet that they use them for umbrellas, is a mediæval German one ; but it is hardly indigenous to the German soil, having, evidently, been imported from the Orient during the Crusades. It is found in a poem of which various versions exist ; two fragmentary ones from the twelfth century (about 1180), and two complete, from the first half of the thirteenth. It describes the marvelous adventures of Herzog Ernst in the Orient, and teems with fabulous creatures and incidents. Among the many wonderful nations whom Duke Ernst visits, are the Flat-feet, who avail themselves of their enormous flat feet, to run over the swampy ground (all their country is marshy), and as umbrellas and parasols.”

#### THE CURUPIRA.

Everywhere on the Amazons one hears of the curupira, who lives in the forest, and leads people astray that he may destroy them. He is a little, brown man, they say ; his feet are turned backward, so that his tracks are reversed, and one who attempts to run away from him along his trail, will but run to destruction. Some say that the curupira is bald, that he has enormous ears, or green teeth ; but in these points the descriptions vary. The Indians use the name generically, evidently believing that there are many curupiras, as there are many deer or monkeys.\*

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\* Prof. Hartt (*O mytho do Curupira*, p. 2), says : “An Indian woman of Mandós told me that there were many curupiras, of both sexes, who lived in hollow trees ; they have the form of Indians ; the female is more fleshy than the male, and has long hair.” Bates (*Naturalist on the Amazons*, p. 43) writes : “Sometimes he

Old Maria dos Reis, of Santarem, told me the following curupira story, one of many that are found among the Indians :

There was once a man who had a wife and one little child. One day this man went into the woods to hunt, and there he was killed by a curupira. The curupira cut out the man's heart and liver ; then he took the man's clothes and put them on his own body, and, thus disguised, repaired to the house where the woman was waiting for her husband. Imitating the voice of the man, the curupira called :

“ Old woman ! old woman ! where are you ? ” \*

“ Here I am,” said the woman ; and the curupira went into the house.

At first the woman took little notice of him, supposing that it was her husband. The curupira said :

“ Here is some nice meat that I have brought you ; go and cook it for me,” and he gave her the heart and liver, which he had cut from her husband's body. She took them and roasted them over the fire ; she brought mandioca-meal also, and spread the dinner on a mat, and the curupira sat down with the woman and child, and all ate heartily.

“ Now,” said the curupira, “ I will go to sleep ; ” and he lay down in a hammock. Presently he called : “ Bring the child and lay it with me in the hammock.” So the woman brought the child, and laid it on the curupira's arm, and the curupira and child went to sleep.

After awhile the woman came to look at him, and then she discovered that it was not her husband, but a curupira. In great alarm, she began to make preparations to leave the house ; she put all the clothes and household utensils into a basket ; then, softly taking the child from its resting-place, she placed a *pilão* (great wooden mortar) on the curu-

is described as a kind of orang-utang, being covered with long, shaggy hair, and living in trees. At others he is said to have cloven feet, and a bright red face. He has a wife and children, and sometimes comes down to the clearings to steal mandioca.” Other authors speak of female curupiras, but I have never heard of them.

\* “ *Minha velha ! minha velha ! onde está ?* ” The terms “ Old man,” “ Old woman,” are used on the Amazons, as they are in the United States, as a kind of matrimonial nickname.



pira's arm, and so ran off with the basket on her back, and the child astride of her hip.

She had run only a little way down the path, when the curupira awoke, and discovered the trick that had been played on him ; jumping up, he ran down the path after the woman, calling loudly :

“ Old woman ! old woman ! where are you ? ”

The woman saw the curupira coming, while he was yet a long way off : she ran still faster, but the curupira gained on her, at every step. There was a *mundut* bush by the path : the woman got under this and lay, trembling, until the curupira came up, calling :

“ Old woman ! old woman ! where are you ? ”

“ There was an *acurão* bird on a branch overhead, and it called “ *Mundut ! Mundut !* ” \* trying to tell the curupira where the woman was ; but the curupira did not understand ; so, after searching for awhile, he ran on down the path. Then the woman got up and ran off through the forest by another road ; but in the mean time the curupira had discovered his mistake, and he ran after her, calling :

“ Old woman ! old woman ! where are you ? ”

The woman came to a great hollow tree, with an opening at the base of the branches ; on this tree sat a frog, *Curucuná*, which makes a very thick and strong gum.

“ O Curucuná ! ” cried the woman, “ I wish that you were able to save me from this curupira ! ”

“ I will save you,” said the frog ; “ the curupira shall not harm you.”

Then the frog let down a long rope of gum ; the woman climbed up this rope into the tree, and the frog put her into the hollow.

The curupira came up, calling :

“ Old woman ! old woman ! where are you ? ”

“ Here she is,” said Curucuná.

Then the woman begged the frog not to let the curupira come up ; but the frog answered : “ Never fear : I will kill the curupira.” And he did as he said ; for he had covered the tree-trunk all over with gum, and, when the curupira tried to climb up, he stuck fast, and there he died ; and the woman got away with her child and went home.

Old Maria told me that I should take great care when

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\* This is something like the note of the bird.

walking alone in the woods, for often the curupira calls from the bushes ; when one follows the sound he calls again, farther away, until the rambler is lost ; then the curupira kills and eats him. He deceives hunters in the same way, by imitating the note of an *inambú*, flying from bush to bush.

Dr. Couto de Magalhães\* says that the curupira is the guardian deity of the forest.

“ In the province of Pará, when the voyager hears some far-away noise in the forest, the paddlers say that it is the curupira, who is beating on the *sapopemas*† to see if the trees are strong enough to withstand a tempest which is drawing on. The function of the curupira is to protect the forests. Any one who cuts down or wantonly spoils the trees, is punished by being forced to wander for an immense time in the woods, without being able to find his way out.”

Prof. Hartt‡ gives another curupira story, which, as he remarks, is interesting from its resemblance to the well-known “ Boots and the Troll ” tale :

A man was hunting in the forest ; led astray by one of these beings, he lost his way, and at night went to sleep at the foot of a tree.

The curupira came up to him and beat on the *sapopema* of the tree ; the man awoke.

“ What are you doing here, brother ? ” asked the curupira.

“ I was lost, and I remained here,” answered the man.

“ Then,” said the curupira, “ give me a piece of your heart to eat ! ”

Fortunately the man had killed a monkey : with his knife he opened its body, and cutting out a piece of the heart he gave it to the curupira, who ate it, supposing it to be the man’s heart.

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\* Op. cit., Part II., p. 139.

† The great, flat, projecting roots, which serve as buttresses to many Brazilian forest-trees.

‡ Op. cit., p. 3.

"It is very sweet!" said the curupira; "give me the whole!" And the man gave him the rest of the monkey's heart. Then he said:

"Now you must give me a piece of your heart."

The curupira thought that if the man could cut out his heart, he also could do the same. So he asked the hunter to give him his knife, cut open his own body, and fell dead. The man, free from his enemy, fled.

After a year, the hunter remembered that the curupiras have green teeth; so he went to get the teeth of the one he had killed, to make a string of beads. He found the skeleton at the foot of the tree; taking the skull in his hand, he struck one of the teeth with his hatchet: when, to his amazement and fear, the curupira stood alive and smiling before him.

"Thank you, brother, for having awakened me!" said the apparition. "I had laid down a moment to sleep." Then he gave the man an enchanted arrow, saying that with this he could kill any game; but he charged him not to tell any one from whom he had received it.

Heretofore this man had been a bad hunter; but now he killed much game every day. His wife, noticing this, asked him often how he had become so expert. The husband at length told his wife all, and immediately fell dead.\*

Boots, eating a match with the troll, puts a bottomless sack under his vest; the giant eats, but Boots puts everything into the sack, and so wins the match. In the end he shows the troll how he has a hole in his stomach; *i. e.*, the end of the sack. Troll attempts to make a hole in his own stomach, and kills himself.

The myth of the curupira is found almost everywhere in South America, and it clearly existed when the whites first appeared. It is mentioned by De Laet; Acuña gives a very distinct account of it,† crediting the real existence of these

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\* Observe, in this as in the Tucano-yúa story, it is feminine curiosity which costs the man his life; a common feature in eastern tales.

† "Una gente que todos ellos tienen los pies al revés, de suerte que quien no conociendo los quisiese seguir sus huellas, caminaria siempre al contrario que

people with reversed feet. Later, we find notices of the curupira in many authors. Humboldt\* appears to have heard the story all through Spanish South America.

“It is among the cataracts (of the Orinoco) that we first begin to hear of the hairy man of the woods, called *salvage*, that carries off women, constructs huts, and sometimes eats human flesh. The Tamachas call it *achi* (*atschi*), and the Maypures *vasitre*, or great devil. . . . We shall first observe that there are certain regions where the belief is particularly prevalent among the people; such are the banks of the Upper Orinoco, the valley of the Upar, near the lake of Maracaybo, the mountains of Santa Martha and of Merida, the provinces of Quixos, and the banks of the Amazon near Tomependa. In all these places, so distant one from the other, it is repeated that the *salvage* is easily recognized by the traces of its feet, the toes of which are turned backward.”

In Southern Brazil, according to Dr. Couto de Magalhães, the curupira stories are widely spread. They are found in Paraguay, and in Guiana: thus, their distribution corresponds very nearly with that of the Tupí language. So far as I know, there are no Old World legends which resemble these more closely than do the troll stories of Norway; yet there are curious points of resemblance with the negro and Malayan stories, which have arisen from the chimpanzee and orang-utang.

#### MATINTA-PERÊ.

I can learn very little about this mythical being, which seems to be rather a phantom than a definite form. The

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ellos: llamanse *Mutayus*, y son les tributarios a estos Tupinambás de hachas de piedra para el desmonte de los arboles, quando quieren cultivar la tierra, que las hazen mui curiosas; y de continuo se ocupan en labrarlas.” Nuevo Descubrimiento, LXX.

\* Travels. English Translation, V., Part I., p. 81.

Indians say that it comes sometimes in the night, walking or flying about the paths and near the villages. Generally it is invisible, and only the rustling of wings is heard, or the song, *matinta-perê*, often repeated. At other times it assumes the shape of an old man, of a priest, or any other person or thing. When it is frightened by shouting, it disappears in the air, with rustling of wings. The story goes that it is fond of sweets, and is often heard at night about the little Indian sugar-mills. Probably such accounts are caused by the great moths, which are frequently heard about the mills, flying off rapidly when alarmed, but invisible in the darkness.

The *matinta-perê* is perfectly harmless. Sometimes it calls to a passer-by. A Santarem Indian told me of one which accosted an old man, who was passing by one of the sugar-mills ; a voice came from behind a stump : " Where is your molasses ? " but when the old man looked, he found nobody.

Another Indian told me that a *matinta-perê* was seen in the streets of Pará, soon after the rebellion of 1835. The patrol heard some one singing ; following the voice, they found an old mulatto woman in an orange-tree ; as she could not answer their questions, they took her to the guard-house, and there she was locked in securely ; but in the morning she was gone.

The *Tau-taú*\* of Ereré seems to be only another name for the *matinta-perê*. It haunts a mirití grove near the village, and is sometimes seen in the form of a bat, a snake, a bird, etc., but it is never dangerous.†

Perhaps the following superstition relates also to the *matinta-perê*, but the narrator, an Indian of Santarem, could

\* A settlement near Pará is called *Tau-taú*.

† Compare the *Uru-taú*, Phantom-bird, mentioned by Magalhães.

not tell me the name of the being that figures in it ; when questioned, he called it a lost soul :

When a man wishes to become accomplished in any art or exercise, he must take a new calabash, that has never been used, and fill it with water ; in the water he must place a shrimp. When the people are jumping over the fire in the village,\* the man waits until many have jumped ; then he also passes the fire, and taking his *cuia*, goes to the forest alone, and always in the thick night. Where four roads meet, he places the calabash on the ground and waits. After awhile there appears a being, sometimes in the form of a woman, sometimes as a bull, or a dog, or any other shape : all night the man must fight with the being for the possession of the *cuia* ; at length the being becomes exhausted, and asks, " What do you want ? " The man tells him, and the being says, " Take it and go ! " But if the man is overpowered, the being kills him, and takes away the calabash, leaving the body on the ground.

#### JURUPARY.

This Tupí word is now used for the Semitic devil ; but beyond doubt, the name corresponds to an aboriginal myth, of which very faint traces are now found among the Indians. According to Dr. Couto de Magalhães, the jurupary is " a being who, in the night, chokes the children, or even the men, to bring them trouble and bad dreams."

Jurupary is said to transform himself into ravenous beasts. Sometimes he offers fruit to the Indians, who fall asleep, and are then devoured.

Claude d'Abbeville† (1614), treating of the Maranhão Indians, wrote :

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\* This German and Eastern custom of jumping over the fire once a year, for good luck, is common along the Amazons ; the fires are generally made for this purpose on St. John's Eve. There are some indications that the Indians held the superstition before the arrival of the whites ; but the more probable supposition is, that it was introduced by the Portuguese.

† Histoire de la Mission des Peres Capucins en l'Isle de Maragnan, Cap. LII.

“ They believe in the existence of bad spirits, which we call devils, and they call jeropary, and fear them greatly. Speaking of them, they said : ‘ *Ypochu jeropary* : ’ jeropary is bad, good for nothing. They told us that this evil spirit, appearing to them visibly, tormented them and afflicted them cruelly ; but we never saw him.”

CAÁ-PÓRA, THE FOREST-DWELLER.

The caá-póra, or caypór, has often been confounded by authors with the curupira, but the Indian stories distinguish clearly between the two. The caá-póra is a giant, not a dwarf, and its feet are not turned backward, as in the curupira. Mr. Bates speaks of an Indian masked dance at Teffé, in which one of the maskers enacted the part of the caá-póra.

“ According to the figure, he is a bulky, misshapen monster, with red skin and long, shaggy, red hair hanging half way down his back. They believe that he has subterranean campos and hunting-grounds\* in the forest, well stocked with pacas and deer. He is not at all an object of worship, nor of fear, except to children.” †

Dr. Couto de Magalhães‡ says that the caá-póra is the protecting deity of the forest game.

“ They represent him as a man of gigantic size, covered with black hair over his body and face, and always riding on an immense wild hog ; he is scowling, taciturn ; at intervals he gives a cry to drive on his herd of wild hogs. Whoever sees him is certain to be unfortunate, and to have ill-luck in all he undertakes ; from this comes the Portuguese-Brazilian phrase, *Estou Cahipóra* : I am unfortunate, unlucky in my plans.”

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\* The idea of subterranean hunting-grounds, and worlds, is found in many Indian stories, and especially in the Mundurucú cosmogony, in which mankind is represented as emerging from the lower world by a hole, through which a cord has been lowered. We shall see it farther on in one of the Amazon myths.

† Bates : op. cit., p. 120.

‡ Op. cit., Part II., p. 126.

## ANHANGA.

This mythical being is mentioned by several ancient and modern authors, and stories of it are said to be found on the Amazons, but I have never heard them. I quote the description given by Dr. Couto de Magalhães :

“ The destiny of the animals of the campo (open lands) appears to be confided to Anhangá. Tradition represents him as a white deer with fiery eyes. All who pursue an animal with young, run the risk of seeing Anhangá, and the sight produces fever, and sometimes madness.

“ Near Santarem, an Indian was pursuing a doe, who was followed by a sucking fawn. The Indian wounded the fawn, and was thus able to capture it ; he concealed himself behind a tree, and caused the little one to cry. Attracted by the agonized voice of her offspring, the deer approached the tree within a few paces, and the Indian shot her with an arrow ; but as he went to secure his prize, he found that he was the victim of a delusion of Anhangá ; the doe whom he had been pursuing was his own mother, who lay dead on the ground, pierced with the arrow, and all torn with spines.”

From the same author I quote the following legend :

## “ RUDÁ, THE GOD OF LOVE.

“ He is represented in traditions as a warrior who resided in the clouds. His mission was to create love in the heart of man, give him longings for home when he was absent, and cause him to return to his tribe from his wanderings. Like the other deities, it appears to have had inferior gods, namely : *Cairé*, or full moon ; *Catiti*, or new moon, whose mission was to cause longings for the absent lover. The Indians considered each form of the moon as a distinct being.

“ An old lady of Pará gave me the text and music of the invocations which the Tupís made to Rudá and his two satellites. I transcribe them just as I heard them ; but it appears to me either that the language is adulterated, or that it is a fragment of the older Tupí, for there are words that I do not understand. These invocations were made at



the set of the sun, or the moon, and the song, like almost all those of the Indians, was slow, monotonous, and melancholy.

“The young Indian girl, oppressed with longings for her absent lover, directed her prayer to Rudá at sunset or moonset : extending her right arm in the direction in which she supposed her lover to be, she sang :

“ ‘ Rudá, Rudá, Iuáka pinaié,  
Amãna, reçaicú iuaka pinaié.  
Aiueté Cunhã Puxiuéra oikó  
Ne mumanuára ce recé quahá caarúca pupé.’

“I do not understand the word pinaié, but by the sense, I presume it to be, ‘*who art,*’ ‘*who resideth;*’ the rest is perfectly intelligible.

“ ‘ O Rudá ! Thou who art in the sky, and who lovest the rain !  
Thou who art in the sky ! Cause that he (the lover) among the women that he meets may find that all are ugly ; cause him to remember me this evening, when the sun sets in the west ! ’

“The new and full moon had similar invocations, and with the same end of bringing the lover back to his home.\*

“The Rudá had also at his service a serpent, who recognized those young girls who had preserved themselves virgin, receiving from them the presents which they brought him, and devouring those who had lost their virginity. The Tupinambás of Pará believed that there were some of these serpents in Lake Juá, a little above Santarem. When any young girl was suspected of having lost her virginity, her parents took her to the lake, and, leaving her alone on a little island, with the presents destined for the serpent, retired to the margin near by and began to sing :

“ ‘ Arára, arára mbóia,  
Cuçucui meió.’

“ ‘ Arara ! O Arara Snake ! Here is thy food ! ’

“The serpent began to come to the surface and to sing, until he saw the girl ; then he received the presents, if the girl was really virgin, and in this case he swam around the lake singing softly until the

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\* For want of space I omit the other songs. Many similar ones, both in Tupí and Portuguese, are sung on the Amazons.

fishes went to sleep, and the voyagers could gather them for their voyage ; or, in the contrary case, he devoured the girl with frightful cries." \*

#### OIÁRA, THE WATER-MAIDENS.

Stories of water-maidens are common on the Lower Amazons. The Indians say that these maidens are exceedingly beautiful ; they have long, black hair, in which they entwine the flowers of the *morerú*.† They entice the young men by their beauty, and by the sweetness of their songs ; once in their embrace, they drag them down into the water, and nothing more is ever heard of them.

Although these tales are current among the Indians, I am inclined to think that they were introduced by the Portuguese. But there was, undoubtedly, an aboriginal myth which bore a considerable resemblance to the Old World stories, which have been tacked to it. The myth, as given by Dr. Couto de Magalhães, represents the Oiara (or Uauyará) as a male, not a female :

“ The fate of the fishes was confided to Uauyará ; the animal into which he transformed himself was the river-porpoise. No one of the supernatural beings of the Indians furnishes so many legends as this. There is not a settlement of the province of Pará where one may not hear a series of these stories, sometimes grotesque and extravagant, often melancholy and tender. The Uauyará is a great lover of our Indian women ; many of them attribute their first child to this deity, who sometimes surprises them when they are bathing, sometimes transforms himself into the figure of a mortal to seduce them, sometimes drags them under the water, where they are forced to submit to him. On moonlight nights the lakes are often illuminated, and one hears the songs and the measured tread of the dances with which the Uauyará amuses himself.”

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\* Couto de Magalhães: op. cit., Part II., p. 139.

† Pontederia. Dr. Barboza Rodriguez says that the oiára has the tail of a porpoise.

## THE AMAZON MYTH.

Orellana's story of the Amazon women runs in this wise : The Indians, far up the river, had told him of a woman-tribe, who were rulers over a great country ; and these rumors increased as the Spaniards travelled eastward. At length, above the mouth of the Trombetas it would appear, they had a fierce battle with certain Indians who fought with wonderful prowess. According to Herrera :

“ Father Carbajal affirms that these Indians defended themselves so resolutely because they were tributaries of the Amazons, and that he and the other Spaniards saw ten or twelve Amazons, who were fighting in front of the Indians as if they commanded them. These women appeared to be very tall, robust, fair, with long hair twisted over their heads, skins round their loins, and bows and arrows in their hands, with which they killed seven or eight Spaniards.”

Herrera very properly adds : “ But every reader may believe as much as he likes.”

Orellana and Carbajal were confessed traitors, and by no means careful in their statements ; we might pass these without much notice ; but when the Jesuit, Acuña, gives a circumstantial report of the women, we are bound to suppose that there must have been some foundation for it. In reading Acuña's narrative, I have always been struck with its minute truthfulness ; and this part has such an appearance of candor that we must suppose he believed most thoroughly what he wrote.

“ I only tell,” he urges, “ what I heard with my own ears, and gathered with care from the time we entered this river. For there is nothing more common than the report of these women who dwell here ; and

nobody is ignorant of them. The accounts are as extended as they are strong in their agreement with each other." \*

Acuña received his most circumstantial report from the Tupinambá Indians. They described the women as living among high mountains, near the Jamundá.

"They are women of great valor, who have always kept themselves from ordinary intercourse with men; and even when these, according to agreement, come every year to their land, they receive them with arms in their hands, which arms are bows and arrows; and these they brandish for a little time, until they are satisfied that the men come peaceably; then, throwing down the arms, they all run to the canoes in which the men have come, and, taking each one the first hammock that she finds, she carries it to her house, and receives the owner as her guest for a few days; after which the men go back to their own country, returning every year at the same period. The female children which are born of this intercourse are preserved and brought up as their own, for these are to perpetuate the valor and customs of their nation; what they do with the male children does not certainly appear. An Indian who, when he was a boy, had gone with his father to this meeting, affirmed that the male children were delivered to their fathers in the succeeding year; but it appears more probable, from the reports, that as soon as their sex is discovered they are killed."

Two opinions have been maintained by authors respecting this account of Acuña: first, that the Amazon women did really exist and were seen by Orellana; second, that the whole story was an invention of Orellana and Carbajal, perpetuated by Acuña from his love of the marvellous, or obtained from the Indians by leading questions.

But the story of Amazon women in the New World was not confined to the relations of Orellana and Acuña, nor to this region. Let us review the testimonies that have been given on this subject.

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\* Nuevo Descubrimiento, LXXI.

Columbus, in the narrative of his first voyage, speaks of women fighting in the West Indies, associating them, apparently, with the Caribs :

“ I saw no cannibals, nor did I hear of any, except in a certain island called Charis (Porto Rico), which is the second from Española on the side toward India, where dwell a people who are considered by the neighboring islanders as most ferocious : and these feed upon human flesh. . . . These are the men who form unions with certain women, who dwell alone in the island Matenin (one of the Virgin Islands, probably) which lies next to Española on the side toward India ; these latter employ themselves in no labor suitable to their own sex, for they use bows and javelins as I have already described their paramours as doing, and, for defensive armor, have plates of brass, of which metal they possess great abundance.” \*

Sir Walter Raleigh \* (1595) brought tidings of these women from Guiana :

“ And though I digresse from my purpose, yet I will set downe what hath been deliuered me for truth of those women. And I spake with a Casique or Lord of people that told me he had been in the riuier (of the Amazons) and beyond it also. The nations of these women are on the south side of the riuier in the Prouinces of Topago (Tapajós ?), and their chieftest strengths and retraicts are in the llands scituate on the south side of the entrance, some 60 leagues within the mouth of the same riuier. The memories of the like women are very ancient as well in Africa as in Asia. . . . But they which are not far from Guiana do accompanie with men but once in a yeere, and for the time of one moneth, which I gather by their relation to be in Aprill. At that time all the Kings of the borders assemble, and the Queenes of the Amazonas,

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\* *Epistola Christofori Colon* . “ Hi sunt qui coeunt cum quibusdam feminis,” etc. The translation is that of Sir Robert H. Schomburgk, published by the Hakluyt Society.

† *The Discoverie of Gviana*, Edit. Hakluyt Soc., pp. 27, 28.

and after the Queens have chosen, the rest cast lots for their Valentines. This one moneth they feast, daunce, and drinke of their wines in abundance, and the moone being done. they all depart to their owne Provinces. If they conceiue and be deliuered of a sonne, they return him to the father ; if of a daughter they nourish it and retaine it, and as many as have daughters send unto the begetters a Present, all being desirous to increase their owne sex and kinde ; but that they cut of the right brest I do not finde to be treue. It was farther told me, that if in the wars they tooke any prisoners that they used to accompanie with those also at what time soever, but in the end for certaine they put them to death, for they are said to be very cruell and blood thirsty, especially to such as offer to inuade their territories. These Amazonas haue likewise great store of these plates of gold, which they recouer by exchange chiefly for a kind of greene stones, which the Spaniards call Piedras Hijadas, and we use for spleene stones, and for the disease of the stone we also esteem them. Of these I saw diuers in Guiana, and commonly euery king or Casique hath one, which their wiues for the most part weare, and they esteem them as great jewels."

Acuña states that reports of the Amazons were heard in Peru and New Grenada. The Jesuit, Cyprian Baraza, writing near the close of the seventeenth century, gave an account of the Amazons to the west of the Paraguay river, in 12° S. lat. About this time, also, similar reports came from the vicinity of Bahia.

About the middle of the last century, the French savant, La Condamine, came down the Amazons. On his return to France he read a paper concerning the fighting women, in which he expressed his belief in their real existence. He asserted that he heard everywhere of the Amazon women ; according to the reports which he obtained, they had retired to the mountains of Guiana or the Upper Rio Negro ; but old Indians remembered hearing their fathers speak of them ; and the curious ornaments of green stone (*muira-kitan*), which were worn as amulets, were ascribed to the Amazons ;

the stones, it was said, were given to the men who visited these women.

La Condamine has recorded a circumstantial report of the women, which he received at the mouth of the river Oyopoc; and he adduces the testimony of two Spanish governors of the province of Venezuela, to the effect that a tribe of warlike women dwelt in the interior of Guiana.

Humboldt treats the story very cautiously, but he inclines to follow La Condamine. From the missionary, Father Gili, he quotes the following account, obtained on the Orinoco :

“ ‘ Upon inquiring of a Quaqua Indian what nations inhabited the Rio Cuchivaro, he named to me the *Achirigotoes*, the *Pajuroes*, and the *Aikeambenanoes*.<sup>\*</sup> Well acquainted with the Tamanac tongue, I instantly comprehended the sense of this last word, which is a compound, and signifies *women living alone*. The Indian confirmed my observation, and related that the *Aikeambenanoes* were a community of women, who fabricated long *sarbacanas*,<sup>†</sup> and other weapons of war. They admit once a year the men of the neighboring nation of Bokearoeo into their society, and send them back with presents of sarbacans. All the male children born in this horde of women are killed in their infancy.’ ”

Humboldt remarks :

“ ‘ This history seems framed on the traditions which circulate among the Indians of the Maragnon, and among the Caribbees ; yet the Quaqua Indian of whom Father Gili speaks was ignorant of the Castilian language ; he had never had any communication with white men ; and he certainly knew not that south of the Orinoco there existed another river called the Amazons.’ ”<sup>\*</sup>

Still more modern travellers have repeated these stories. Sir Robert H. Schomburgk, the explorer of British Guiana,

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<sup>\*</sup> In Italian, *Acchirecotti*, *Pajuri*, and *Aicheambenano*.

<sup>†</sup> Blow-guns, used by the Indians.

<sup>‡</sup> Humboldt : *Voyages*, Engl. Trans., Vol. V., Part I., p. 391.

reports that traditions of the Amazon women are still current among all the Indian tribes who have had intercourse with the Caribs.

“ The Indians of the Lower Corentyn, of the Essequibo and Rupununi, declared to us in the gravest manner, during our travels in these regions, that the separate hordes of females still live in the upper part of the Corentyn, in a country called Marawowne. The accounts we received respecting their country, were accompanied by such details that the tradition assumed some probability. We were told that when we should have passed high above the great cataracts in the Corentyn, at the point where two huge rocks called Poomoco and Surama rise from each bank of the river, and bound it like a portal, we might consider ourselves in the land of the *Woruisamocos*. We received similar accounts from the Macusis, who reside on those savannahs which form the supposed site of Keyme’s El Dorado ; when travelling over these plains, we frequently came to sequestered spots where we observed a great quantity of broken pottery, which our Macuri Indians invariably adduced as a proof of the former residence of the *Woruisamocos* on these places. Of all Guianians, however, the Caribs are the most versed in wonderful tales. All agree in the facts that such a republic existed in the interior of Guiana, towards the head of the Corentyn, and in a district which no European ever visited ; that these females are called *Woruisamocos*, that they shoot with bow and arrow, and use the *cura*, or blowpipe, cultivate their own grounds, and hold no intercourse with other Indians, save once a year when they permit men to visit them in parties of twenty ; and if the offspring prove a male they kill it, but rear up female children.” \*

Rev. W. H. Brett† confirms the report of Schomburgk, that stories of the Amazons are current among the Guiana Indians ; it is related that the women live on certain inaccessible mountains.

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\* Schomburgk : Introd. to Raleigh’s Discoverie of Gviana, p. lix., Hakluyt Soc.

† Indian Tribes of Guiana, p. 386, note.



Modern Amazonian travellers—notably Alcide d'Orbigny, Edwards, Wallace, have treated the whole account of the Amazons as a fiction, or imagination of the Spaniards. Southey, after weighing the evidence, says : “ If I had never heard of the Old World Amazons, I would not hesitate to credit those of the new continent.” \*

Amid all this jumble of contrary opinions, what are we to believe ? It seems impossible that so many reports, from widely separated localities, can have arisen solely from the imagination of travellers, or their desire to reproduce an Old World legend in the New. Where, then, is the foundation on which the stories have been built ?

We may safely set down as false or exaggerated the account of Carbajal, in which he affirms that he actually saw the women in battle. As Wallace and others have shown, the dress of the Indian men of savage tribes is very little different from that of the women ; and aside from this, it is well known that in many tribes the women accompany the men in battle ; this was observed with the Mundurucús who attacked Santarem during the last century, and in other instances. If Carbajal really believed what he wrote, he must either have mistaken the men for women, or, seeing the women fighting with their husbands, he jumped to the conclusion that these were the Amazons themselves.

As for the other accounts, I believe that Acuña has unwittingly given us a key to their origin. Speaking of the Tupinambás, he says that he received from them reports of several neighboring nations. One of these, the *Mutayus*, had the feet turned backward ; another, the *Guyaxis*, were dwarfs. Now, the description of the *Mutayus* corresponds

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\* History of Brazil. I quote from memory.

exactly with the existing myth of the curupira, and there are many stories current in Southern Brazil which have for their chief character the *Saci Cerêré*, a dwarf; to this, or some similar myth, we must refer the Guyazis. The story of the Amazons was received from the Tupinambás, and this also, I am convinced, must be referred to an aboriginal myth. As similar reports were received from Paraguay, Bahia, the Orinoco, Guiana, New Grenada, and the West Indies, the distribution of this Amazon story must have corresponded very closely to that of the curupira; in other words, to the Tupí-Guarany language and its dialects.

Stories of women who lived separated from men, are still related along the Amazons. The most interesting one with which I am acquainted, is that found by Dr. Barboza Rodriguez on the Jamundá:

“Long ago some women, who had abandoned the men of their tribe, came down the river Jamundá. The men, discontented, followed them; but numberless obstacles barred their way, so that they could never overtake the women. Sometimes the thorns formed dense thickets in the forest; again, ferocious animals protected the flight of the fugitives, or bands of howling monkeys pelted them from the branches, or the curupira led them astray; in short, everything conspired to aid the women, and retard their pursuers. At length the women took pity on their former husbands and lovers; they halted at the hill Yacy-taperé, and received, as their vassals, those who had been their absolute lords; imposing certain conditions, which were accepted. These were, to be admitted to their society only once every year; to receive the male children who came from these unions; and only the fathers of female children were considered worthy to be recompensed with the *muirá-ktan*, or Amazon stone. The women afterward disappeared in the ground, guided by an armadillo, who opened the road before them.” \*

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\* Barboza Rodriguez: O Rio Yamundá, p. 46. In a Mundurucú legend, *Rairú* is dragged down to a subterranean world by an armadillo.

The *muirá-kitans*, always connected with these Amazon stories, are ornaments made of intensely hard crystalline rock, generally jade, feldspathic stone, or quartz. They have various forms; sometimes they are rough imitations of birds or beasts; often they are cylindrical beads, two or three inches long, and pierced with holes longitudinally. Similar ornaments are still made by the Uapés Indians of the Upper Rio Negro, where whole lifetimes are said to be employed in their preparation.\* On the main Amazons these stones are now exceedingly rare; as the Indians cannot comprehend how they were made, they always give them a miraculous origin. The common story is, that they were formed of a rock which can be cut beneath the water, but which hardens on exposure to the air.† Two other legends are more clearly mythical. One, first recorded by the Conego Francisco Bernardino de Souza,‡ runs as follows. The lake referred to is Yaci-uaruá, near the Jamundá:

“It is related that at a certain period of the year, and a certain quarter of the moon, the Amazons came to the shore of this lake to celebrate a festival, dedicated to the moon, and to the *Mãe da Muirakitan* (mother of the Amazon-stone), who dwelt there. After having purified themselves some days, by this expiatory festival, they dived into the water, late at night, and when the moon was reflected in the lake. From the Mãe da Muirakitan they received the stone, of whatever form they desired, for as soon as it was exposed to the sunlight it hardened, so that the shape could never more be changed.”

The other legend, given by Dr. Barboza Rodriguez, re-

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\* Wallace: Travels on Amazon and Rio Negro, p. 278: quoted by Dr. Barboza Rodriguez.

† A similar origin is ascribed to other stone utensils; even the better educated classes believe in the existence of this rock, and stories of its discovery at different places are often related. It was credited by Buffon and Seyfried.

‡ Lembranças e Curiosidades do Valle do Amazonas, p. 99.

lates that the stones were alive in the lake ; to catch them the women were obliged to cut themselves, and put a drop of blood in the water over the Muirakitan which they desired ; the stone then remained quiet and was easily captured.

The few *Muira-kitans* which remain among the Indians are worn as charms, suspended from the neck ; they are said to remove certain diseases, and so highly prized are they, that it is nearly impossible to purchase one.

Dr. Barboza Rodriguez \* gives another Amazon story, current at Ereré, where I myself have heard fragments of it :

On the Hill of Paituna dwelt a tribe of women who had abandoned their husbands, and only retained with them one old man. The sons who were born of this alliance were killed, and only the daughters were preserved. But one day, one of these women had a son so ugly and covered with scars that she took pity on it, and would not kill it ; as she could not preserve the child, she hid it in a grotto in the midst of the forest. She tried to cure it of its scars with medicinal plants, but as these had no effect, she put it in a *tipitt*,† fastened the lever to the sack, and thus squeezed the child forcibly until he was transformed into the most beautiful of boys.

The boy grew. The women, who suspected that he was still alive, sought for him and found him. They began to seduce him with their enchantments. One day he said to his mother :

“ Hide me, my mother, for the women persecute me ! ”

Then commenced a series of changes of the hiding-place, but the women always found the boy again ; finally, mother and child agreed that it was better for him to be thrown into the lake, for here the women would not go to seek him. So the boy, Paitunaré, went to live in the lake, where the mother went every Saturday to call him and give him food. When the woman called, an enormous fish appeared on the margin : this transformed itself into the beautiful young man, who had come thus to be with his mother.

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\* Op. cit., p. 47.

† The straining-sack for Mandioca, described in the chapter on Ereré.

But the mother was watched, and the dwelling-place of the son was discovered. Then, on a certain day, the women came and imitated the voice of the mother, calling, Paitunaré! Paitunaré! The young man, deceived, emerged from the water, and was received in the arms of the women. So the women, who loved the young man, forgot the old one, who knew nothing of what was passing, but only saw that he was neglected; endeavoring to find the cause of this, he surprised them one day with Paitunaré. Mad with jealousy, he sought vengeance; he prepared a net and threw it into the lake, and when he pulled it he saw Paitunaré caught in the meshes; but the latter, by a quick movement, broke the net and escaped. The old man made another and still stronger net, but with the same result. Despairing of securing his adversary in this way, he formed a new plan. One day, when the women were gathered about his hammock, he reproached them with their indifference, but they answered with protestations of love. On this he required a proof, which they, not to give him cause for mistrust, immediately granted. Each one cut off a lock of her hair, and of these the old man wove another net and threw it into the lake. This time the strength of Paitunaré was useless; he was dragged to the shore and killed.

The disappearance of Paitunaré spread consternation and sadness among the women. Discovering that the old man was the assassin, they abandoned him and fled. He pursued them, until they entered a cave; then he heard music, which opened a path for the women through the earth. He attempted to advance, but thousands of spiders and lizards and other odious creatures impeded his progress. The music continued, and the women still advanced. Then a multitude of serpents appeared, and the old man, tired and sad, gave up the chase and returned to his house. There were only left to him the birds and pet animals that he had reared.

As there was no one to prepare his mandioca-field, he went next day to make a clearing. When he returned he was very hungry; to his surprise he found the *furno*\* hot, and covered with *beijúts-cica*.† Every

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\* The earthen pan on which *farinha de mandioca* is prepared.

† Cakes made of mandioca-meal.

day, on returning from his work, he found his dinner waiting for him in the same manner.

Curious to solve this mystery, he one day feigned to go to the field, but hid himself in a thicket by the house. Thence he saw his pet parrot fly from her perch to the kitchen; there she was changed into a beautiful woman, who, throwing off her dress of feathers, began to prepare *beijúts-cica*. As she lit the fire, the old man sprang out, caught her, and threw the feather-dress into the fire.

“Who are you?” he asked.

“The only woman who loved you, and who, not wishing to go with the others, was transformed into a parrot. I thank you for having broken my enchantment.”\*

Here ends the tale. The *furno*, now a great rock, and the cave are still shown by the Indians.

Dr. Rodriguez expresses the belief that these legends originated with the Jesuit missionaries, who, to perpetuate the accounts of their compatriots, spread tales of the Amazons among the Indians. I cannot agree with this. Acuña, Raleigh, and the rest, must have heard these or similar tales; in recording them they may have shown a natural leaning toward the Greek legend, but they did not invent the myth, nor introduce it.†

I am not aware that any of the foregoing stories have a very great resemblance to North American Indian myths. Two of them, the Oiára and the Amazon stories, do resemble closely the corresponding Old World legends; to these, which are clearly indigenous, we may perhaps add the story of the Flat-feet. The other myths that I have recorded show more remote resemblances to European and Eastern tales; thus, the Curupira seems to be allied to the Troll of Norway; Anhangá and-Caá-póra remind one of the Oriental Genii;

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\* The latter part of this story appears to be a separate myth, which has been tacked on to the other.

† May not the story of *El Dorado* have originated also from a myth?

and the Jurupary corresponds pretty well to Eastern conceptions of the devil. In the Tucano-yúa one can discover a kind of likeness to the Harpy and the Gorgon ; and belief in the evil-eye is almost universal among the Eastern and Germanic peasants. Add to these that many of the animal stories have their counterparts in African and Eastern fables ; and I believe I have said enough to show that the resemblances between the Amazonian and Oriental mythology are very remarkable and interesting.

There is one story, however, which is exceedingly curious, because it is a close counterpart of one of our Hiawatha legends ; but, at the same time, it has some singular resemblances to Eastern traditions, and especially to the Bible story of the Christ-child. It was obtained by Dr. Couto de Magalhães from an old lady of Pará, who, in turn, had heard it in her childhood from the Indians.

#### THE STORY OF MANÍ.

“ Long ago the daughter of a chief, near Santarem, was discovered to be with child. The chief wished to punish the author of his daughter’s dishonor, and the wound to his own pride ; but before prayers and threats, and even blows, the girl steadfastly declared her innocence. The chief was deliberating to kill her, when a white man appeared to him in a dream, and told him not to kill the girl, because she was really innocent and virgin. In the fulness of time the girl gave birth to a beautiful female child, who was white, like the vision ; this caused great surprise, not only in her own tribe, but among the neighboring nations, many of whom came to visit her. The child was called Maní ; she walked and talked precociously ; but at the end of a year she died, without being ill or giving any sign of pain.

“ She was interred in the house, which was unroofed, and the grave was watered daily. At the end of some time a plant sprang out of the grave ; and because it was unknown to them, the people did not pull it up. It grew, flourished, and gave fruit. The birds who ate the fruit

became intoxicated, and this phenomenon increased the superstitious care of the Indians. At length the earth cracked open; they dug into it, and in the root which they found they believed that they saw the body of Maní. They ate it, and thus learned the use of mandioca. Hence also the name, *Mani-oca*, the house or hiding place of Maní." \*

#### THEOGONY OF THE ANCIENT TUPÍS.

I believe that the Indians were, and still are, incapable of the abstraction required to conceive of an eternal and spiritual God. They seem, however, to have had some faint idea of a supreme being, whom they called *Tupan*; and this word was used by the missionaries as the name of the Deity.

Beyond this, Dr. Couto de Magalhães† believes that he has discovered a definite theogony. While I am not yet prepared to accept these generalizations fully, it is but right to say that no other author who has written on this subject, has had such favorable opportunities of studying the Indians throughout the wilder regions of Brazil; and great care seems to have been taken in collecting and comparing the legends.

The account of our author is, in brief, as follows :

“The theogony of the Indians rests on this primal idea : that all created things have a mother, or maker. There are three superior deities : the sun, *Guaracy*, creator of all animals; the moon, *Jacy*, creator of plants; and *Perudá*, or *Rudá*, the god of love, who promotes the reproduction of living beings. Each of these three has inferior deities beneath him. Beneath the sun is *Guirapurú*, who has charge of the birds; *Anhanga*, who protects the field-game; *Cad-póra*, who protects the forest-game; *Uanyará*, who keeps the fishes. Submitted to

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\* This is, in fact, the original name of the plant. *Oka*, *oca*, *og*, in Tupi-Guarany, is a house. On the Amazons the root is often called *manniva*, or *mantua*, no doubt from *Mani-uá*, fruit of Maní.

† Op. cit., Part II., p. 122.



*Jacy*, the moon, are *Saci Cerêré* (in South Brazil) ; *Mboitatá*, the fire-snake, who protects the campos from fire ; *Urutaú*, the phantom-bird, and *Curupira*, the guardian of the forests. Beneath *Rudá* is *Cairé*, the full moon, and *Catiti*, the new moon. Each of these in turn has as many inferior gods as the Indians admit classes ; and these are served by as many beings as the Indians admit species : and so on until every lake and river, and kind of animal or plant, has its protective genius, or mother."

## CHAPTER XIX.

### THE TRIBUTARIES OF THE AMAZONS.

ASCENDING the Mississippi from its mouth, one passes by four great tributaries—the Red, Arkansas, Ohio, and Missouri; the Missouri, in its turn, receives the Platte and Yellowstone, so that we can reckon, altogether, six branches which exceed seven hundred miles in length. This is a larger number than the Asiatic and African rivers possess. The Niger has no large branches at all; the Nile has only three or four, which are almost dry during half of the year; the Yang-tse-kiang has no single branch as long as the Ohio; and so with the rest. In South America, the Paraná receives the Uruguay and Paraguay, each as large as the Red River. So far, the comparison is favorable to the Mississippi.

Now glance at a map of the Amazons. There are at least sixteen tributaries that measure more than seven hundred miles in length; the most of them exceed a thousand. Some of these great branches receive streams almost as large as themselves, and the lesser rivers that flow into the Amazons would count up a full hundred or more. King of rivers, the Amazons bears a princely train.

Three southern affluents, the *Tocantins*, the *Xingú*, and the *Tapajós*, may naturally be classed together. They all

rise in the table-lands of Goyaz and Matto Grosso, and flow almost north, to the Amazons. All of them are clear-water rivers, running over hard rock and sand; all are obstructed by rapids, except in their lower courses of two hundred miles or less, where they are expanded into wide lakes. This is the reason, I suppose, why they have been so greatly over-estimated. The lakes are unobstructed, but they have hardly any current except what is produced by the tides; at the lower rapids, the rivers are sadly dwindled. They are, indeed, very long—gigantic on the map, but we must not look in this direction for such affluents as the Madeira and Ucayali. The high table-land is not a rainy country, like the flat expanse to the west of it. It forms a long slope to the Amazons, with picturesque hills and *taboleiros*, some hundred feet above the river-bed; even along the lower courses, the land rises in steep bluffs, as we have seen on the Tapajós. Near the Amazons, the rains are pretty regular, but not as heavy as along the main river; farther south, the dry season is a real dry season, with clear skies for months together. Wallace, returning from a five weeks' voyage on the Tocantins, could write:

“We had not a wet day on the whole voyage, yet found, to our surprise, that in Pará it had been the same as usual—a shower and a thunder-storm every second or third day.”

On the lower Tapajós, the summer is almost as strongly marked:

“The river sank with the increasing dryness of the season; the canoe descended deeper and deeper, and, with the glaring sun overhead, we felt at midday as if in a furnace.”

That is what Mr. Bates found on the little Cupary branch; at Itaituba, the weather in the dry season is like August in

New York. Above the lower falls of the Tapajós, there are weeks of rainless weather, followed by torrential showers in February and March. This marked division of the seasons produces a corresponding change in the volume of the three rivers. In the flood months, they are freely navigable to the lower falls, and some of the rapids disappear under the rush of water; but in September and October, these same rapids are black with rocks, and even below them there are sandbanks running half across the channel. Steamboats must then keep to the lower portions of the lake-like expanses. The rapids themselves are entirely impassable for large vessels, though trading canoes do make perilous voyages to Goyaz and Cuiabá. There are long stretches of still water between the falls, and when this rich interior country is settled, they will be highways, not to the outer world, but from one city to another.

We have already studied the Tapajós. The Xingú and Tocantins are so much like it that our impressions of one river would almost answer for the others. The Tocantins is the largest of the three; sixteen hundred miles by the Araguaya branch, and nearly fifteen hundred by what is considered as the Tocantins proper. Castelnau explored these two rivers from their junction, southward,\* and many Brazilian travellers have been over the same ground. As a highway, the Tocantins is even more important than the Tapajós; every year, trading canoes come down from Goyaz to Pará, returning with cargoes of European and American wares. Above Cametá, the river is full of sand-islands, covered with woods—a little archipelago. I passed

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\* He published a large map of these upper courses. A reasonably good sketch map of the Lower Tocantins has lately been published in Lisbon, by Sr. José Vellozo Barreto.

by these islands in 1870, with a party that ascended the river in a little Government steamboat; it was a very enjoyable trip, though the climate of this region is of the sultriest. I remember the mile-wide, level sand-banks, and the high clay-cliffs at the sides, mottled, for all the world like Castile soap. There are splendid groves of Brazil-nut trees, rising sheer above the forest in great, dark masses; and then the river itself is a beautiful sheet, so clear that you can see the bottom almost anywhere. We lived on our boat, which was just wide enough to allow us to swing the hammocks across it; ate fish from the river and turtles' eggs from the sand; made the acquaintance of the poor people, at little settlements hidden along the forest-covered banks. Baião is quite an important village, for an Amazonian one; and Cametá is a cheery little city perched on a high bank; it has an odd appearance from the river, owing to the great scaffolding in front of it, whence wooden steps lead down to the water. They raise much cacáo, and a little cotton, in this region; large quantities of Brazil-nuts and rubber are obtained in the forests.

The Xingú is much shorter, and we know comparatively little about it; nothing, except by report, of its upper courses. I cannot do better, in describing it, than to quote from a manuscript account which I received from Sr. D. S. Ferreira Penna, of Pará. No man living knows more about the river, and no one is more careful and accurate in his accounts.

“The Xingú takes its rise in 15° S. lat. Its principal affluent, or confluent (for all reports make it equal to the Xingú itself), is the Irirí. The river flows from south to north; in its upper and middle courses, it is often widened into lake-like expanses, with numerous wooded islands. It is so straight that open horizons are almost always

seen, up and down the channel. Only after receiving the Irirí, the river suddenly changes its course, and forms the *Grande Curva* (Great Curve). At the beginning of this curve, the Xingu is, so to speak, folded back on itself, returning to the southeast; here it forms a lake, so wide that Prince Adalbert compared it to the sea; thence the course is changed to the north and west, until it reaches almost the original longitude, in which it continues its course to the Amazons.

“In this immense curve are the principal falls; chief among them, that of *Itamaracá*, utterly impassable for any vessel. The water rushes down a steeply inclined plane, two or three miles, and then precipitates itself, in a tumultuous mass, over a perpendicular wall of rock, forming the *Salto de Itamaracá*. Fortunately for the canoemen, the river, before it arrives at the inclined plane, has divided; the lesser branch, called the *Tapayuna*, has also many perilous rapids, but they are passable by small canoes, at certain seasons. Below *Itamaracá* there are other falls, but small ones, which can be passed during the floods. Below these there are reefs and islands, until the river finally assumes its northwest course, which it keeps to *Porto do Moz*. At lat.  $3^{\circ}$  S., there are numerous alluvial islands, and here the river is already three or four miles wide; below them, the channel is unobstructed. The greatest width, between *Pombal* and *Veiros*, is four or five miles; thence the river narrows gradually to *Porto do Moz*, where it is less than a mile wide. The settlements along the lower course are *Souzel*, *Pombal*, *Veiros*, or *Maruá*, *Porto do Moz*, *Boa Vista*, *Villarinho*, and *Carrazedo*; *Souzel*, and *Porto do Moz* have a very small commerce; the rest are so poor that it is hardly worth while to visit them, especially in the wet season, when they are almost deserted. Formerly, there was a Capuchin mission among the *Juruná* Indians, above the great curve, but it is now abandoned.”

The *Jurunás* and *Tacunhapéuas* are the only pacific tribes of this river; they, it is said, were driven toward the white settlements by continual persecution of savage tribes in the interior. The latter are as utterly wild as the jaguars and pumas that roam through the same forests. They have no trade with civilized nations, will not even speak with a white

man, and do not know the use of iron, which the more civilized tribes adopted long ago. Because of these savages, and because there are no settlements on the Upper Xingú, the river has never been used as a highway. There are traditions of voyages down the river from Matto Grosso ; but most of our information is after this fashion :

“ The first hunters who entered this territory, killing some partridges, found grains of gold in their crops ; a proof that there must be more or less of it in the country ; and they found white deer, and game of various other kinds.” \*

White deer and game are as plenty as ever. I have talked with persons who have hunted through these forests, and whose information is no more definite. They look for gold yet, and possibly it exists above the falls. Two hundred years ago, report located a kind of second El Dorado about the head of the Xingú ; a wonderful gold mine, called the *Martyrios*, “ which, as they say, took its name from the instruments of the Passion, appearing miraculously in the veins of a rock.”

The Xingú was visited in 1842 by Prince Adalbert of Prussia, with Count Oriolla and Count Bismarck—Prince Bismarck we call him nowadays, but very few persons know that the great statesman ever made such a forest-journey. I am reminded here of a wonderful adventure, which the two counts had with a big *sucurijú* snake. Oriolla gallantly “ threw himself at full length upon the creature, as it was sliding away, and thrust his cutlass into its back a few feet from the tail. The count vainly tried to stop the monstrous reptile, which dragged him along, though the cutlass had pierced its body and entered the ground beneath.” How-

\* Ayres de Casal : Corographia Brasilica, vol. i., p. 270.

<sup>38</sup>  
 ✕ This is incorrect - the Count Bismarck of the expedition was not the mighty Chancellor of later days.  
 G. C.

ever, Bismarck blew the snake's head to pieces with his gun ; a summary method, which he afterward developed most fully. I wish, for glory's sake, that the sucurijú had been forty feet long instead of sixteen ; it is a pity to spoil so good a story. Adalbert and his party explored beyond the great curve, and spent several days among the Juruná and Tacunhapéua Indians ; to the published narrative of this journey I refer the reader who wishes to know more of the Lower Xingú.\*

The rich natural products of the Xingú are almost untouched. It is known that rubber-trees grow on the islands in great number ; Brazil-nuts, cobahiba, salsaparilla, cumarú,† and other drugs, are found in immense quantities. So far as we know, the shores of the lower and middle courses are everywhere bordered with forests ; but it is natural to suppose that the open lands, which border the eastern side of the Tapajós, approach the Xingú also. About the head waters it would appear that there are many campos.

After all, this neglected river may yet prove to be the most important highway from Pará to Matto Grosso.

“ The Xingú,” writes Sr. Penna, “ is shorter and smaller than the Tapajós, but its navigability, except in the falls of the great curve, is far superior. The Tapajós is obstructed, all along its middle course, by falls and rapids, which can only be passed by land ; but the Xingú, in the corresponding portion, is quite clear. On the head waters there are numerous rapids, but they are all passable by *Ubás* and other small boats.”

A company of enterprising Brazilians propose to explore the Xingú, and open up its rubber and drug mines ; by building a road across the great curve, they will avoid

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\* Prince Adalbert's Travels, vol. ii.

† *Dipterix odorata*.



the falls, and thus obtain an open route, far to the interior. I heartily hope that they may be successful; certainly, this seems far less visionary than the majority of Brazilian schemes, and the names connected with it are among the best in Pará.

At Porto do Moz, I heard a curious story about the Upper Xingú. A man assured me that he had passed from the Xingú to the Tapajós in a canoe, by a channel which connects the two rivers. We may reasonably doubt this; but I cannot positively deny its truth. We know that these South American rivers indulge in curious freaks; witness the dividing of the Araguaya, and its meeting after it has cut off an island sixty miles long; or the connection of the Orinoco with the Rio Negro by the Cassiquiare channel. Other such river connections are spoken of.

The Xingú, above its mouth, receives Amazonian water through the narrow *Furo d'Aquiqui*. I may just mention here the river *Jaurucú*, which enters this Aquiqui channel from the north. I ascended it to a point sixty miles from Porto do Moz; by all accounts, it is navigable at least as much farther. The general course is north-northeast; the channel, three hundred yards wide, passes to and fro across the flood-plain, which has a regular width of about two miles, and is bordered, on either side, by bluffs three hundred feet high. Such a channel and flood-plain the Xingú or Tapajós would form, if the lake-like expanses above their mouths were filled in with sediment. The Jaurucú is navigable for steamers, at least in the wet season. Occasionally the grass might impede the navigation, as it did when I was descending; the whole channel had been filled in, for half a mile, with floating islands of *canna-rana* grass, forming a treacherous kind of bridge. We forced our way past, over the

flooded meadows at the side ; but for a time I thought that we were to be imprisoned until the grass floated away.

Lieut. Gibbon,\* who came down the *Madeira* in 1852, had a wild voyage and a hard one. But since then the great river has been explored and re-explored, so that we know it very well. Herr Keller† has pictured it for us, with his beautiful series of drawings : work which I cannot praise too highly, in the great mass of incorrect and unartistic pictures that have appeared. Here, indeed, is a tributary worthy of the Amazons. A good two thousand miles, its waters roll down from Bolivia, and steamers run up five hundred and fifty miles, to San Antonio. The series of rapids above—nineteen in number—obstruct the navigation for one hundred and eighty miles ; but beyond, there are long courses of free water-way, to the very heart of Bolivia and Matto Grosso. The *Bení*, *Mamoré*, *Guaporé*, are so many great natural highways, which will some time bring the products of this region to the Atlantic.

That is what Col. George C. Church, and the Messrs. Collins, believe. It remains to be seen whether they can carry out their plans, and open up the Bolivian plains ; and then, if they do succeed, there remains that more momentous question, whether Bolivia is worth opening up just at present. A magnificently rich country it is, no doubt ; but its population of three million is largely composed of Indians, who do little more than take care of themselves. Bolivia produces a great deal of grain, and some cacáo and coffee ; but I question if she can bring them down to the Amazons, and sell them so as to compete with the United States, and other

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\* Valley of the Amazon. Part II.

† The Amazon and Madeira Rivers. The work appeared originally in German, but there are several English editions.

countries ; I question, most of all, whether she will do it, tied as she is by a weak government and excessive burdens on commerce.

For all that, one cannot help sharing something of Col. Church's enthusiasm. Everybody has heard of the Madeira and Mamoré Railway Company ; how it failed in the hands of English contractors ; how Americans took it up, without understanding well the difficulties of the country, so that their five hundred American laborers had a hard enough time of it, what with insufficient food and the ague attacks. Then the English bond-holders locked up the money in Chancery, and there was nothing with which to pay the workmen ; they wandered down to Pará, and a hundred came to New York, a pitiful crowd, with ragged clothing and emaciated faces. Unthinking persons blamed the contractors severely ; and no doubt, they misunderstood the difficulties of the undertaking. But to my mind there was greater fault in the legal trickery of the bond-holders. I suppose that the railroad will be built in time, but the communication will never be perfect on the Lower Madeira. In the height of the dry season, there are bars, with only four or five feet of water ; indeed, it was reported in 1878 that vessels drawing three feet could not pass ; yet the channel is three-quarters of a mile wide.

The Madeira is rich in rubber ; Bolivian and Brazilian merchants have established themselves along the banks, each one with forty or fifty Indian rubber-gatherers under his orders. The most of these gatherers come from Bolivia. They are brought down the river, under contract to work for a term of years ; by the time their period of service has expired, they are in debt to their employer, who keeps them thus in a condition of semi-slavery, while he himself is a

richer slave to the Pará creditor. For the rest, there are other forest products along the banks, salsaparilla and Brazil-nuts, and so on, but agriculture is almost unknown.

The Tocantins, Xingú, and Tapajós, flow, with many rapids and falls, from the high table-lands of Matto Grosso ; the Madeira, passing through the much lower Bolivian plateau, has few falls, and its navigability is far superior to that of the former rivers ; only the most remote fountain-heads spring from spurs of the Bolivian Andes. But with the Madeira, we leave the table-lands altogether, and enter the great western plain, where, for hundreds of miles, there is never a hill to break the dead level of the forest. Four great tributaries lie entirely within this plain : the *Purús*, the *Juruá*, the *Jutahy*, and the *Javary*. These four resemble the Madeira in some points, but they are utterly unlike the Tapajós and Tocantins. Their whole character depends on the extreme flatness of the country through which they flow. In the first place, they have no rapids or falls, unless close to their heads ; steamers ascend until they are stopped by shallows, or even by logs across the stream. Then, the channels are excessively crooked, winding about in broad flood-plains, and continually changing as banks are washed away on one side and fresh deposits are thrown down on the other ; rarely the river passes by a point of low terra firme ; elsewhere there is only the endless line of varzea or swamp forest, with side channels and lakes along the lower courses, and sand-banks in the stream. The water is clay-stained, whitish or yellow ; the Javary alone is black, near its mouth, from the rotting vegetable matter that it holds in solution, but farther up it is muddy like the others. Probably this dark coloring matter is characteristic of all the low-country, forest rivers ; but in most of them it is overpowered by clay and mud

held in suspension ; in the Rio Negro, as we shall see, it is the most remarkable feature.

The Purús, Juruá, Jutahy and Javary, are immensely rich in rubber trees. Every year they are ascended by hundreds of *seringueiros*, but in February and March the whole transient population is driven away by the floods. It is said that the Purús has an annual rise and fall of more than forty feet, and the other rivers vary almost as much in volume. With the floods, the low forests on either side are all overflowed ; it is even reported that canoes can pass from one river to another, near their heads,—from the Juruá to the Javary, or from the tributaries of the Purús to the Juruá. We cannot place much faith in these reports of river connections, but where flood-plains are so wide and irregular, it certainly does not seem impossible that they should meet each other. At any rate, we know that immense tracts are submerged every year ; then the rivers are almost deserted by whites and civilized Indians ; wild tribes retreat to the terra firme, or live on rafts in the flooded forest ; the whole country is a reeking, dripping, soaking, drowning swamp, until the dry season comes around again, and the rubber-gatherers and traders come back. In such a country one would look for malaria and fevers ; yet the four rivers appear to be generally healthy. At long intervals there are bad years—sometimes three or four together ; then the *seringueiros* die, or retreat to the Amazons, and, for a time, the fever-smitten district is deserted.

Of these four rivers, the Purús is by far the largest and most important ; almost as long as the Madeira, and unobstructed to its very head. Yet this magnificent stream remained unexplored until 1864. The lower courses were, indeed, frequented by rubber-gatherers, and two or three

surveying parties had been sent to the river by the Brazilian and provincial governments; well equipped parties, who accomplished almost nothing. In 1864, Mr. Chandless undertook this task, unaided. He ascended the river in a canoe, with a crew of Bolivian Indians, and passed, not only beyond the limits of all other exploring parties, but beyond all the known savage tribes. At first he met with Indians who traded with the whites, and had good axes and knives; then a tribe that possessed axes also, but worn and broken ones, which they had bought from the tribe below them; then others, who did not know the use of iron, and placed no value on it whatever; far beyond even these, a lonely family in the forest, who had never seen a white man, never heard of one probably, of whom the savage tribes below could give no information. Beyond even these went the brave Englishman, until the river was little more than a brook; until, in narrow places, he could touch the branches on either side, at the same time. Here, at length, he found rapids, some of which he passed. At short intervals, he took careful observations of latitude and longitude; the result was, a map of the Purús, which remains a model to all explorers. Not content with this, Mr. Chandless returned to the Purús, and made a long exploration of one of the tributaries. Two modest papers in the *Journal of the Royal Geographical Society* \* describe these two explorations; they read like romance; they shine like pure gold, among the dross which scores of other South American travellers have left us. Chandless was eight months ascending the Purús, and he reached a point eighteen hundred miles from the mouth; we may safely infer

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\* Vol. xxxvi., 1866.

that the river is at least nineteen hundred miles long, and for twelve hundred miles it is navigable for steamboats; at its mouth, it is nearly a mile wide.

Mr. Chandless has also explored the Juruá, which is twelve hundred miles long, and navigable for one thousand; at its mouth, it is half a mile wide. The Jutahy is much smaller. Brown and Lidstone ascended it in a small steamer, for ten days, but their account is almost worthless.\* I can glean nothing from it, except that the river is very crooked, and constantly changing its channel; that it is black below and muddy above, that it has many side-channels, and receives, as tributaries, the *Upiah* (Upiá?) and *Mutum* from the east, and the *Coroem* from the west, at the farthest point attained by the party. The Indians met with spoke Portuguese and *Lingua Geral*, and were clothed, but savage tribes were reported farther up. There are cliffs of white and pink sand, with bands of clay; the highest of these is one hundred and twenty feet above the river. The remainder of the description is devoted to two monkeys, of whom any reader can learn by referring to the book.

The Javary forms the boundary between Brazil and Perú. In 1866 it was explored by a mixed commission of the two countries, and boundary-marks were set on either bank.

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\* These Englishmen were employed by the Amazonian Steamboat Company to make a geographical and geological survey of the Amazons and its tributaries, and to locate the public lands granted to the company. They had better facilities than were ever before enjoyed by Amazonian explorers; their book, "Fifteen Thousand Miles on the Amazon and its Tributaries," is such a monument of glaring stupidity as has seldom been formed even on this fertile theme. Besides the negative fault of being almost devoid of information, it has the positive sin of being full of unpardonable errors; as, for example, the assertion that the *Lingua Geral* (Tupí) language was *invented* by the missionaries. The Portuguese and Indian orthography is as bad as it can be. The map and illustrations are, however, very good.

It is said that the commissioners ascended for thirty-five days, without meeting obstructions of any kind. Above this, the river was obstructed by shallows, and the strong current prevented farther advance with large boats. The smaller boats, with which the exploration was continued, were retarded by tree-trunks across the channel; provisions gave out, and it became necessary to divide the party. Three commissioners and fourteen soldiers went on with a light *igaraté*, and two very small canoes. After two weeks of very difficult progression, the health of the party began to give way, and the larger *igaraté* was sent back with a number of sick. Up to this time, there had been no direct encounters with the savages, though their canoes and fish-traps were often seen. Now a new obstacle was found in the rude bridges, which the Indians had thrown from bank to bank. The surveying party cut these away, as they had the tree-trunks; either to avenge this insult, or because they looked upon the whites as enemies, the Indians attacked them with poisoned arrows, killed one of the commissioners, and four men, and captured one of the canoes. The survivors fled down the river with the smaller canoe, and, after many privations, succeeded in joining their companions below.

The Javary is even more tortuous than the Purús; with all its curves, it is probably thirteen hundred miles long. Where the terra firme touches the river there are cliffs of tertiary clay, full of fossil shells.\*

The great tributaries that follow may be classed, with the *Alto Marañon*, as the sources of the Amazons; on the south, the *Ucayali* and the *Huallaga*; on the north, the

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\* Brown and Lidstone: *Op. cit.*, p. 448. Similar beds are found on the Amazons, near the mouth of the Javary, and above it.



*Pastassa* and *Napo*. All these take their rise along the eastern slope of the Andes, from mountain-lakes, or snow-fed torrents ; they rush down, with rapids and falls and strong currents, until they reach the plain ; there they become quiet, winding streams, like their neighbors below them, yet always with a more rapid current, to tell of their mountain birth.

The Ucayali is the longest and largest of the five heads ; the extreme length is nearly thirteen hundred miles, or rather more than the Marañon itself. Reasoning on this alone, we might call it the true head of the Amazons ; but the Marañon is deeper and wider, and keeps the east and west course for a long distance above the junction of the two rivers ; the Ucayali, therefore, must be looked upon as a tributary, though a mighty one indeed. It has been navigated by small steamers for nearly eight hundred miles, and by large ones for more than six hundred ; canoes ascend to *Puerto Tucker* on the *Pachitea* branch, almost a thousand miles from the mouth, and twenty-nine hundred miles from the Atlantic. Beyond the Pachitea, on the main river, there are furious rapids, which have, indeed, been descended in canoes, but with such perils and hardships as few readers can conceive of. M. Castelnau was thirteen days in passing from *Echaraté* to the last of the great rapids ; here is his description of the descent of one of these falls :

“ It took us an hour and a half to pass the fall, which is composed of two strong rapids. Just below, we found two more rapids ; the first we passed along the left bank ; but the second was impassable on this side ; after consultation, we decided to cross the river. We found the current exceedingly strong ; the fall roared and dashed only a hundred metres below us. The Indian paddlers cast anxious glances over the intervening water ; at one time we seemed to be sweeping downward,

but the men redoubled their exertions, and we passed to the still water on the other side. At this moment, we heard cries behind us, and an Indian pointed to the canoe of M. Carrasco, just behind us; it was struggling desperately with the current. At one moment it seemed to be saved, but the next instant we saw that it was lost; down into the gulf it shot, like an arrow. The Indians and Peruvians threw themselves into the water; the old priest alone remained in the canoe, and we could hear him repeating the prayer for the dying, until his voice was drowned in the roar of the rapids. Cold with horror, we hastened to the bank, where we met our companions, struggling to the shore from the lost canoe. M. Bizerra was in great danger, but amid all, he never let go the journal of the expedition, which he carried in his teeth."

Below the rapids, the current is still strong—from two to three miles per hour—and there are dangerous shallows and sand-banks. It is a wild region, almost deserted, even by the savage Indian tribes. Two or three little mission villages are the only marks of civilization, except the Peruvian steamboats, which sometimes ascend the river, but to very little purpose, for there are no products to bring down, except fish and turtle, or a few drugs.

The Huallaga was explored in the early part of the century, by the Englishman, Smythe; later, in 1851, by Lieut. Herndon. It is hardly half as long as the Ucayali, and steamers can ascend, at most, but one hundred and seventy miles; yet canoes pass the rapids to *Tingo Maria*, almost at the source, and only three hundred miles from Lima. The country along the Huallaga is much more thickly—say, rather, less thinly—populated than the Ucayali region; Herndon describes it in glowing language:

"Were I to engage," he writes, "in any scheme of colonization, for the purpose of evolving the resources of the valley of the Amazons, I think I should direct the attention of settlers to this district. It combines more advantages than any other that I know; it is healthy, fertile,

and free from the torment of mosquitoes and sand-flies. Wheat may be had from the high land above it ; cattle thrive well ; and its coffee, tobacco, sugar-cane, rice and maize, are of fine quality."

After this, his description of the Indian villages comes in funnily enough ; the people so richly poor, the dignitaries with high titles, who cannot even write their names.

"The people have no idea of comfort in their domestic relations ; the houses are of mud, thatched with palm, and have uneven dirt floors. The furniture consists of a grass hammock, a standing bed-place, a coarse table and a stool or two. The governor of this populous district wore no shoes, and appeared to live pretty much like the rest of them."

Here is, precisely, the drawback that will long keep settlers away from the Huallaga, and from all other parts of the Amazons valley. What is needed is, not fertile land, easy water-communication, a genial climate ; all these can be found in a hundred places. The one thing lacking is, impetus. Have you ever seen a little, poverty-stricken church or society or company, struggling along with a load of debt, and only poor men to support it ? People keep away from such a stagnation ; the church or society is abandoned by everybody, because everybody abandons it—because prosperous men fear to join an unprosperous body, to assume a part of the debt, to pay out instead of receiving. But suppose your church or society begins to show signs of prosperity, to get the better of its debt ; men consider, and say to themselves : "Here is a society that is advancing ; I will join it, that I may advance also." All the world clamors for membership ; "there is nothing so successful as success." So with the Amazons, or any other unsettled region ; all the theorizing and legislating in the world will not give it life ;

but let it once show signs of motion, of rapid growth, and immigrants will pour in from all quarters.

The Alto Marañon is navigable to *Borja*, two thousand six hundred miles from the Atlantic. Just above this place, the river rushes, three miles, through the *Pongo de Manse-riche*, which, in one place, is only fifty-eight yards wide; the sides are perpendicular walls of limestone. The rapid has been regarded as impassable, but latterly it has been descended in canoes, with frightful perils and loss of life. Above these, there are other rapids, as bad or worse, so that the river is entirely useless for navigation. The Pastassa is little better; steamboats can ascend only seven miles, yet the river itself is nearly five hundred miles long. Here Madame Godin and her party were wrecked in the rapids; here, in the forest, her companions died, and she wandered, half-mad.

The Napo flows down eight hundred miles, from the Andes of Ecuador; for nearly five hundred it can be ascended by small steamboats, so that it is one of the most important tributaries. In its physical characters it much resembles the Ucayali. The upper portion is an impassable torrent; canoes come down from *Napo*, over many rapids; and far below the current is still swift. So Prof. Orton found it in his descent of the river:

“The fall, between Napo village and Santa Rosa, a distance of eighty miles, is three hundred and fifty feet. We were seven hours on the voyage down, and it takes seven days to pole back. The passage of the rapids is dangerous to all but an Indian. Whirling and boiling eddies burst as if from some subaqueous explosion; down-currents are on one side of the canoe, and an up-current on the other; now a cross-stream at the bow, and a diagonal one at the stern, with a foaming Scylla on your right and a whirling Charybdis on the left. But our

nervousness gave way to admiration as our pilot gave the canoe a sheer with the sweep of his long paddle, turning it gracefully around the corner of a rock, against which, it seemed, we must be dashed. The Napo at Santa Rosa runs, at least, four miles an hour, and we picked our way—now drifting, now paddling—through a labyrinth of islands and snags.”

But farther down, the description of the Napo might answer for the Purús, or main Amazons, except for the more rapid current.

“Below Coca, the river throws out numerous channels, which, isolating portions of the forest-clad lowlands, create picturesque islands. The islands, entirely alluvial, are periodically flooded, and undergo a constant round of decay and renovation. The river is full of snags and *plaias*, or low, shelving sand-banks, rising just to the water—the resort of turtles during the egg-season. It was interesting to trace the bed of the river as we floated down: on the rapid slope of the Cordilleras, rushing over or rolling huge bowlders, which, farther on, were rapidly reduced in size, till, in time, bowlders were broken into pebbles, pebbles into sand, and sand reduced to impalpable mud.” \*

There are a few Indian villages along the Napo—half-civilized places, like those on the Huallaga; the people sometimes wash for gold in the river-bed, and this whole region appears to be richly auriferous, if it could but be examined and worked by civilized methods. There are villages, also, on the Pastassa and Alto Marañon, so that the region is a trifle more populous than the Upper Brazilian Amazons. All these places have communication with Lima and Cuzco, or with Quito, by paths over the mountains; but paths that are impassable, even for mules; baggage must be carried on the backs of *peons*, Indian porters, and the traveler wades torrents and clambers over ridges, soaked with the almost hourly rains, tired, bewildered and often half-

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\* Orton: The Andes and the Amazons, pp. 199, 200.

starved. "Whichever route the traveller takes," says Orton, "he wishes he had taken another."

The northern affluents of the Amazons are less numerous than the southern ones, and they have been less fully explored, but they are hardly less important as channels of communication. Below the Napo, three can only be looked upon as first-class tributaries—the *Içá*, the *Japurá*, and the *Rio Negro*. The *Içá* belongs to the same class as the *Purús* and *Juruá*; that is, it is a river of the plain, tortuous, and freely navigable, even into the heart of New Granada. It is, however, much more rapid than the *Purús*, and therefore less favorable to ascending canoes; moreover, no rubber forests have been found along its course. Salsaparilla abounds about the head-waters, but this alone offers little inducement to the traders, and the *Içá* has been neglected. Latterly, it has been explored and mapped, and there is much talk of a steamboat line from *Pará*, by this river, to New Granada. The line, no doubt, is feasible enough, but there is no commercial necessity for it, and if it is established, I fear it will only be another subsidized toy of these unpractical governments.

Spix and Martius ascended the *Japurá* in 1820, but only to the lower rapids, five hundred and fifty miles from the mouth. Before their time, in the latter part of the last century, the river had been explored and mapped, as far as the *Uriá* fall, by the Portuguese boundary commission. A later boundary commission, under the Brazilian Government (1864 to 1868), made a very thorough survey of the river, as far as the *Cupaty* fall, not ascending to the *Uriá*, because Brazil has abandoned her claim to the upper portion of the river.\*

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\* The results of this exploration appeared in a large map, published at Rio in 1871.

Of the river above the Uriá fall, we know nothing definite ; the Indians, however, report an unobstructed channel for two or three hundred miles. It is said, that there are communications with the Içá on one side and the Rio Negro on the other, in each case with a short portage by land ; though the traders will have it that there are water-channels between, like the Cassiquiare. One passage from the Negro to the Japurá is said to be as follows : From the Negro, by the *Uapés*, passing twenty-six rapids, a route occupying nearly thirty days ; thence, by the *Pururú-paraná*, three hours, to a road which leads to the *Cananari* ; down this, three days, passing nine rapids ; and thence, by the *Apaporis*, twelve days, to the Japurá.\* Whether this route has actually been used by traders, or whether it is merely traditional, from Indian stories, I cannot say. Gold is reported from the Upper Japurá ; rubber is found along the lower courses, but in smaller quantities, it would appear, than on the southern tributaries.

Our best account of the Rio Negro comes from Mr. Wallace,† who spent two years in exploring it, and its great tributary, the Uapés. The Tapajós is called *Rio Preto*, Black River, but the dark color of its waters depends on their clearness. In the Rio Negro, the color is entirely different ; a rich, golden brown in the shallows, deepening into inky black in the main stream. Even in a glass there is a faint tinge of brown. No doubt this color comes from decaying leaves and branches, in the small streams that form its source. They rise in half-swampy forest, on almost level ground, so that they flow very slowly ; in the pools and deep channels they take this stain from the leaves, and the clean

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\* Souza : Comissão do Madeira, p. 71.

† The Amazon and the Rio Negro.

granite and sand of the shore give no clay tint to conceal it. Mr. Wallace remarks on this :

“ All its upper tributaries, the smaller ones especially, are very dark, and when they run over white sand, give it the appearance of gold, from the rich color of the water, which, when deep, appears inky black. Lower down, the Cababurís, Maravihá, and some smaller white-water streams help to dilute it, and then the Rio Branco adds its flood of milky water. Notwithstanding this, the Rio Negro, at its mouth, still appears as black as ink ; only in shallow water it is seen to be paler than it is above, and the sands are not dyed that pure golden tint, so remarkable there.”

Notwithstanding the amount of vegetable matter that it contains, the water of the Rio Negro is perfectly potable and wholesome ; much better than the clear Tapajós.

One remarkable feature of the Rio Negro is its great breadth ; “ for several hundred miles from the mouth,” says Wallace, “ it is from ten to twenty-five miles wide.” But in this lake-like expanse are sown an immense number of islands, so that the view from one shore to the other is almost always obstructed. Mr. Wallace describes this archipelago :

“ We entered a labyrinth of small islands, so flooded that they appeared like masses of bushes growing out of the water. Though Sr. L. is well acquainted with the river, we here almost lost our way, and met another canoe that had quite done so. Again we plunged into a sea of islands, and channels opening among them, often stretched out to the horizon. Sometimes a distant shore continued for days unbroken, but was at last found to be a far-stretching island.”

Above this region, the river is narrowed, and there is a series of rapids, which can be passed in canoes, but with much difficulty ; altogether, they do not add more than fifty feet to the fall. Again, beyond the rapids the channel is deep and unobstructed, almost to the end of the river’s



course. It is this quiet upper river that is connected with the Orinoco, by that strange natural channel, the *Cassiquiare*; a mixture of white and black water, which flows one way or the other according to the season. Canoes sometimes come up the Orinoco from Angostura, by way of the Cassiquiare, to the Rio Negro, and so pass down to Pará. I have a friend who made this journey; but it is rather one of adventure than of profit. There are occasional villages on the Negro, as far up as the Cassiquiare; the people are semi-civilized Indians, with a few white traders, Government officials, etc. They have a small trade in *piassaba* fibre, used for cordage.

The Negro and Japurá may be classed with the Madeira. All these rivers have clear, navigable upper courses, almost to the head-waters; but the middle courses are obstructed by rapids and falls, below which the rivers are wide and deep, with numerous islands, and finally, immense deltas, where they enter the Amazons. The maps place a range of mountains about the head-waters of the Uapés and Japurá; but I think it will be found that this whole region of southeastern New Granada is a slightly elevated plain, like that of Bolivia; perhaps with flat-topped hills, but without any true mountains at all; here the Orinoco, the Negro, and the Japurá take their rise. That is what the rivers themselves indicate, and beyond them we have only the reports of traders, who judge of a country as they see it from the river. A table-land may appear like a mountain to one who passes below.

The rivers that flow down from the Guiana mountains cannot be classed with the great tributaries, but they form a smaller, and very interesting series. As we have already studied two of them, the Curuá and Mãecurú, it will be useful to glance at the others in succession.

Two of these, the *Branco* and the *Yuaperi*, flow into the Rio Negro. The Branco is the most extensive of the whole series: six hundred miles long or more, if the maps may be credited, and navigable for more than two hundred miles from the Rio Negro; beyond that, there are falls and rapids at intervals, to the mountains. At about lat.  $3^{\circ}$  N., and long.  $59^{\circ} 30'$  W. G., the river divides into two great branches, the *Oraricoóra*, flowing from the west, and the *Tacutú*, from the north; the latter river communicates with a large lake, *Pirarára*,\* and its head-waters are only a few miles from the Essequibo, in British Guiana. All along the river there are half-civilized Indian villages; these, through the mountain tribes, keep up a constant though small trade with Demerara, receiving guns and knives in exchange for forest products. There have been many disputes about the location of the frontier in this direction. These quarrels promise to be interminable in future, for the boundary is a range of unexplored, flat-topped mountains, with a possible variation for the line of fifty miles, from north to south.

I can find no reliable notices of the Yuaperi;† it is much shorter than the Branco, and inhabited only by wild Indian tribes.

The rivers *Urubú* and *Uatumá* empty into the Amazons below Serpa, by a common outlet, the *Paraná-mirí da Capella*. In 1874, the Urubú was explored, by Dr. Barboza Rodriguez,‡ to its sources in the swamps below the Guiana mountains. It is nearly four hundred miles long, and navigable for canoes almost to the head-waters. It is very crooked; the general course is southwest to the Amazonian

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\* By some, this is said to be the lake of El Dorado.

† Often written *Juaperi* or *Hiauapirí*.

‡ Relatorio sobre os Rios Urubú e Jatapú.

lowlands, where it enters a large lake (*Lago da Gloria*). This lake receives a *furo* from the Amazons; the river, on leaving it, turns to the east; receives another *furo*, the *Arauató*, from the Amazons; then turns northeast, by the terra firme, to the village of *Silves*. So far, it is much like the *Curuá*, only on a larger scale; moreover, it resembles the *Curuá* and *Mãecurú*, in the numerous lakelets along its lower course, and in the irregularity of its flood-plain. Below *Silves*, however, its channels are complicated by those of the *Uatumá*, with which they are joined. This latter is a wide, clear-water river,\* the upper courses of which have never been explored. Thirty miles from its mouth it receives, from the east, the river *Jatapú*, which was explored by Barboza Rodriguez† for a hundred and fifty miles, through many rapids and falls. The Upper *Jatapú* is inhabited only by the Uassahy Indians, a small tribe, friendly to the whites. The Upper *Urubú* is uninhabited.

The *Jamundá*, also explored by Barboza Rodriguez,‡ is compared by him to the *Urubú*, but it is shorter and smaller, and less freely navigable; like the *Urubú* and *Curuá*, it flows through a large lake (*Lago Grande de Faro*), receiving Amazonian water, turning to the east, and finally entering the Amazons far below its original course. This river is celebrated in story; on its banks *Acuña* located the fabled Amazon women; and near its mouth *Orellana* had that battle in which, according to the chronicle, these women took part.

The *Trombetas* is a clear-water river, but less lake-like in its lower courses than the *Uatumá*; twenty miles above *Obi-*

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\* Observe, all the clear-water tributaries are wide, lake-like, near their mouths.

† Op. cit., p. 48.

‡ Relatorio sobre o Rio Yamundá.

dos, the main channel varies in width from a quarter of a mile to half a mile, and it is deep enough, even for large steamers. On either side there are little lakes ; not varzea-lakes, like those about the yellow-water rivers, but deep indentations of the terra firme, often with two mouths, cutting off little rocky islands ; were the river a muddy one, these lakes would be filled in, leaving only narrow channels with rows of pools, like the Igarapé-pichuna, on the Curuá. The Trombetas is navigable for one hundred and thirty-five miles ; the lower fall, as determined by Lidstone, is in  $1^{\circ} 6' 2''$  S. lat. and  $14^{\circ} 15' 1''$  long. west from Rio de Janeiro ; sixty or eighty miles above this, it would appear, the river takes its rise among the mountains, from the confluence of the *Mahú* and *Capú*. Barboza Rodriguez\* identifies the Mahú with the *Apiniau*, the stream reached by Sir Robert Schomburgk, after his passage over the mountains in 1838. The fugitive slaves about the lower fall are said to have a constant communication with traders from Demerara. About the headwaters of the Trombetas, there are Indian tribes, but many of these are held in subjection, or absolute slavery, by the negroes.

The Cuminá flows into the Trombetas on the eastern side, fifty miles above Obidos ; it is a clear-water river, flowing through a hilly country, and much obstructed by falls and rapids. The Trombetas and Cuminá may be compared to the Uatumá and Jatapú ; add to this the resemblance between the Urubú and the Jamundá (which is connected with the Lower Trombetas by a long channel) and the parallel is still closer.

Passing the Curuá and Mãecurú, there are still four afflu-

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\* Relatorio sobre o Rio Trombetas, p. 29.

ents, on the northern side, between the Mãecurú and the Atlantic. The *Jaúary* has its embouchure in the *Paraná-miri de Paraucoára*, a little below Prainha. I know nothing about it, except from the reports of a friend,\* who explored the banks in search of rubber. He ascended for thirty days, without reaching the head-waters; probably his voyage was much delayed by frequent explorations of the forest, but even allowing this, the time consumed indicates a larger river than has been supposed to exist here. The explorer returned in all haste, being attacked by intermittent fevers.

The *Parú* enters the Amazons just above Almeirim; concerning it, Sr. Penna writes me as follows :

“ I know it as far as the lowest rapid, to which point I ascended in a steamboat. From this point to the mouth, the river runs about seventy miles, through a valley which varies greatly in width; sometimes the hills and little *serras* almost reach the bank; again, and especially in the lower courses, there are low plains (*ygapós*). In this lower portion, the river divides into two unequal channels, which unite again twenty miles below; ten or twelve miles below this junction, the river passes close to the *Serra d'Almeirim*, and flows out into the Amazons, by the *Paraná-miri d'Almeirim*. The general course is east-southeast, varying a little to the southeast. The river is navigable for small steamboats; channel crooked, and about as wide as the Mãecurú at Monte Alegre (three hundred yards). Report says that there are many rapids in the upper courses; all, except one, passable for small canoes; between them, there are many hours of unobstructed navigation. General course southeast. Products, Brazil-nuts, salsaparilla, and a little rubber.”

The *Jary* is much longer; it will rank with the Trombetas in size, and its rich rubber forests make it far more

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\* Received through the kindness of Sr. D. S. Ferreira Penna.

important than the latter river, which has no rubber. Here, again, I am dependent on Sr. Penna for my description :

“ I know the Jary to the lower fall, which is about one hundred and twenty miles from the mouth. This fall is a perpendicular leap, a sheet of water, flowing over a wall twelve or fourteen meters high ; at the left, a spout or trough (*jorro*) empties into the same basin ; still farther to the left, there is a little cascade. The lower course of the Jary is more or less parallel to that of the Parú, but the valley is much wider ; the hills reach the banks more frequently, and they are, really or apparently, higher than those of the Parú. Toward the mouth, the river is very crooked, but, as it is wide and deep, the sinuosities do not retard steamboat navigation. At the mouth it is somewhat narrowed. Above the lower fall, many others are reported, all passable, except one, which is similar to the first. The rocks about these rapids, and at the falls of the Parú, are granite,\* and gneiss. The products of the Jary are, first, rubber, which is extracted in large quantities, notwithstanding the fevers that attack the gatherers ; second, Brazil-nuts, which are very abundant.”

The *Anauèra-pucú* enters the Amazon by two mouths, one fifteen and the other twenty miles above Macapá. Sr. Penna writes me concerning this river :

“ It is sometimes called *Rio de Villa Nova* (River of the New Village), because of a village which was founded there a hundred years ago ; at present, the village is neither new nor old ; it has been abandoned for thirty years. I know only the mouth of the river, which is about as wide as that of Parú, and has more water. It is reported that the course is very long, generally to the east-southeast, but southeast above the first fall.”

From the Rio Branco on the Anauèra-pucú, inclusive, we have thus eleven tributaries, flowing down from the Guiana

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\* Probably Sr. Penna is mistaken in this ; so far as I know, no true granite has been found on the Lower Amazons.

highlands ; to these we may add the Jatapú and Cuminá, which enter the Uatumá and Trombetas, respectively, shortly above the mouths of the latter rivers. There are many smaller streams in this region ; perhaps large ones also, which are yet unknown. None of those mentioned have a course of less than two hundred miles, including their channels through the Amazonian lowlands ; some, like the Branco, Uatumá, Trombetas and Jary, are as large as the Hudson, and much longer. The Uatumá and Trombetas, clear-water streams, are lake-like in their lower courses ; the others have the ordinary character of lowland channels, for a long distance from their mouths. All, except the Urubú, have numerous rapids along their upper courses ; in this respect they resemble the Tocantins, Xingú, and Tapajós, with which they might be classed.

The study of the tributaries gives us a very clear idea of the form of the Amazons valley. Toward the mouth there are highlands on either side ; a steep slope from the Guiana mountains on the north, and a more gentle one from the table-land of Matto Grosso on the south. Farther west, the Madeira flows from the plain of Bolivia, which is much lower than that of Matto Grosso, but still high enough to force the river into a series of rapids at its northern edge, where it falls to the yet lower Amazonian plain. Precisely in the same manner, the Negro and Japurá and Uapés flow from the plain of New Granada ; at first with long stretches of still water, then falling over the edge of the terrace in a series of rapids, then passing on peacefully through the Amazonian plain. Still farther to the west, this flat Amazonian plain has widened out, twelve hundred miles or more ; here it is so level that the rivers have no falls at all ; the highest hills could be hidden under the gigantic forests that cover them. The

western edge of this plain is indicated by the Ucayali and Napo, flowing boisterously down the Andean slopes, and passing quietly through the flat ground beyond. The Hualaga, the Alto Marañon, and the Pastassa, are foaming torrents almost to their mouths ; they are far among the mountains themselves.



## APPENDIX.

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### GEOLOGY AND PHYSICAL GEOGRAPHY OF THE AMAZONS VALLEY.

EVERY river carries down particles of sand and mud, which are held in suspension by its current. As the swift water passes into the sea, these particles have nothing to hold them up; they sink to the bottom by their own gravity. But the impetus of the current at the river's mouth still tends to sweep a clear path before it; hence, the detritus is deposited on either side of the embouchure, in banks. These banks are constantly built up, until they are above the surface of the water; new accumulations are formed at their outer ends, but a free channel is always left for the river. With the ever-increasing banks, this channel grows longer; in time, it may be pushed far out into the sea.

If the river flows in at right angles to the coast, some of the particles are carried directly out to sea, where they form another deposit, a bar in front of the river's mouth, with a clear channel on either side of it. In time, this bar may increase to a more or less triangular island, which we call a delta, from the triangular Greek letter,  $\Delta$ . The two channels lengthen as the first did; one or the other may form a delta island in its turn, and so on, *ad infinitum*. All the complicated system about the mouth of the Mississippi, has been built up thus, in the course of centuries.

It very generally happens that the river widens out to a large bay near its mouth; hence, a portion of these deposits may be found within the bay, where the water is comparatively still. If the river and bay were perfectly straight, and had no tributaries, there would be simply a line of alluvial land on either side of the main channel, with occasional islands, where deltas had been formed. But every tributary brings in a fresh deposit of mud or sand, and the currents are complicated by it, and all sorts of irregularities are the result. So the irregularities of

the Amazonian flood-plain have been produced. Let us see if, out of this confusion, we can yet discover a hidden order, a law of architecture that governs the whole.

Let us suppose that no deposits have yet been formed; that the whole space occupied by the flood-plain is filled with water. There will then be a long, irregular bay, with a slow current toward the east. Every tributary corresponds to a widening of this bay, north or south; consequently, the current will be less apparent near the mouths of the tributaries, and here alluvial deposits will be first formed; the Amazons itself will build up an island before the mouth of the tributary; in course of time, the wide space will be partly filled up, leaving a channel for the Amazons, and two for the tributary.

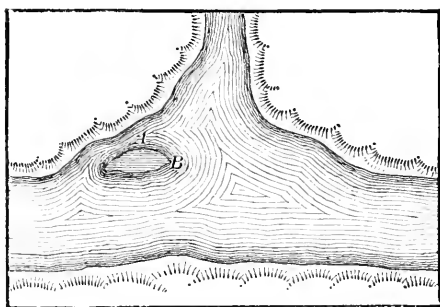


Diagram I.

But the upper arm of the delta will enter the Amazons across the current, or even against it; on this side, the tributary will be driven back by the stronger river; but it will tend to flow out by the lower arm, because that is a little nearer the level of the sea, and it enters the main stream at an acute angle with the current. Consequently the Amazons will send water to the tributary by the upper arm, or

*furo*, and receive the tributary water, and its own, below.

The Amazons is the larger river; hence it does most of the building, and the delta island that we have supposed is not properly the work of the tributary, but of the main stream. Naturally, the island is first formed near the upper end of the wide space, as in Diagram I. Now,

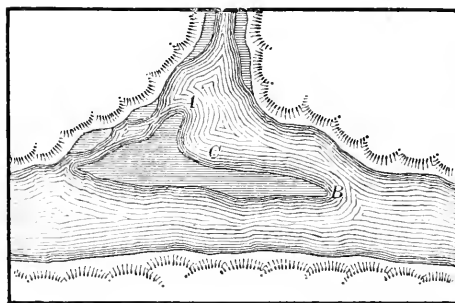


Diagram II.

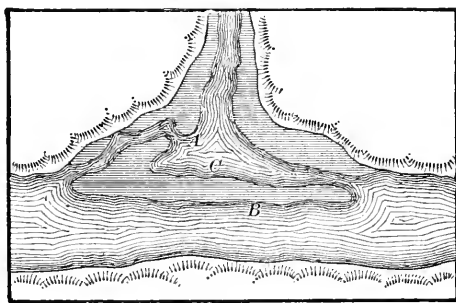


Diagram III.

the channel, *A*, tends to lengthen toward the tributary; and the lower end of the island, *B*, tends to increase toward the east; in time we will have a formation like Diagram II. But, meanwhile, the tributary has been doing its lesser work, lengthening out its own channel; hence the

alluvial formations will assume something of the form that I have represented in Diagram III. The lower end of the tributary channel will still increase in length, and the lake-like expanse, *C*, will be partly filled up,

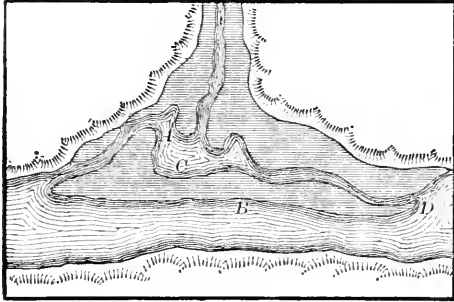


Diagram IV.

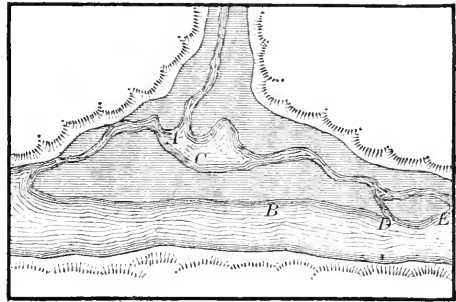


Diagram V.

so that we will have a formation like Diagram IV. Still building, the lower channel, *D*, may form a delta in its turn, so that a second Amazonian furo will flow into the tributary, as in Diagram V.

Of course, as these processes are going on simultaneously, they complicate each other. They may be modified by other causes, as, irregularities in the wide space, the entrance of other tributaries, and so on. But three features will be apparent in almost every case: first, the tributary will receive water from the main river; second, a lake or series of lakes will be left in the centre of the wide space; third, the tributary, after leaving this lake, will turn to the east, generally touching the high land at one or two points, and finally entering the Amazons far below its original mouth. Only in a few cases the furo may be stopped up by deposits from the tributary; and the lakes may disappear, in time, under successive accumulations.

Now apply this to the rivers that we have studied. The Curuá is perhaps the best example, because all the features are illustrated very perfectly by it. It receives water from the Amazons, through the Furo de Mamaurú, which is constantly increasing in length. The Curuá flows through a large lake, with lesser lakes near it; the land all around these is but slightly raised above the water, as if the lake had been much longer, but had gradually been half-filled in, leaving low meadows on either side. Perhaps an old northern limit of the lake may be marked by the crooked little *Furo de Surubiúmirt*, and another by the igarapé and lake *Jauaritúa*. Where it enters the lake, the Curuá has formed a delta island, marked by the *Furo de Baré* on one side, and its own channel on the other. Below the lake, another delta has been formed by the Amazons and the tributary together; Amazonian water flows in through the upper mouth of the Igarapé d'Alenquer, mixing with the tributary, and flowing out again far below.

The Mãecurú is similar ; but in this case the furo has almost disappeared ; it is only navigable in winter. No second delta-island has been formed above Monte Alegre ; hence, there is no ingress for the Amazonian water, and the river flows on to its mouth without any other accession ; only at the embouchure, a little delta has been formed, and the tributary discharges itself by two mouths ; in time, the lower mouth will be carried far to the east, and the upper one will remain as a *furo*, like that of the Curuá.

The Jamundá and the Urubú are almost precisely like the Curuá in their alluvial formations ; and so with the others ; only, there may be three or four, or many furos, as other delta islands have been formed. But where the tributary is a clear-water one, like the Tapajós or Xingú, the system is greatly simplified. Here the Amazons does all the work ; it forms an island in the mouth of the tributary, and gradually extends it on either side, so that two channels are left ; one is a *furo*, through which the Amazons sends water to the clear-water river ; the other is the mouth, generally much narrower than the tributary above it, crowded against the terra firme, and turned sharply to the east. If the tributary is lake-like above its mouth, the Amazonian furo is continually advanced into the still water ; meanwhile, the lower end of the island is constantly lengthened toward the east, and the tributary is thus increased in length, but never to so great an extent as in the muddy-water streams.

More complicated systems, like those about the mouths of the Madeira, Japurá, etc., have often arisen from the confluence of two or more flood-plains, where smaller tributaries flow in. But aside from these, there are the silt-formed islands and banks of the Amazons itself. In a long, irregular estuary, like the one that we have supposed, the river would tend to form delta-islands in every wide space. This is precisely what the Amazons has done. In many places it is split into two almost equal channels ; even within the memory of man, small islands have been formed, the embryos of greater ones.

About small tributaries, like the Curuá or Mãecurú, the silting-up process goes on steadily, and the channels and islands, once formed, are hardly changed. But the Amazons tears down almost as much as it builds ; wherever, along the shores, you see a steeply-cut clay bank, there the river has been at work, eating into the islands, and carrying them off to form new islands below. Generally such banks are on the concave side of a curve, where the force of the current is greatest ; on the convex side, the river may be building, and here the new land is low, flat, unfit for cultivation. On the tributaries and side-channels, the same law is apparent, on a smaller scale. We may lay it down, in general terms, that a river tends to increase its curves, by washing away the

concave sides, and building up the convex ones; hence, the concave sides, old land, will be high, and the convex sides will be low, with a corresponding difference in the vegetation, as we have seen on the Mãecurú and elsewhere. Eventually, as Mr. Chandless has shown, the two arms of the curve may meet; a shorter channel will then be formed, and the old circle will be filled up. On crooked rivers, like the Purús and Juruá, this is very apparent. A striking instance is recorded by Brown and Lidstone, on the latter river:

“Within the last six years, the river has altered its course, by cutting through a neck of land, thereby taking a short cut and abandoning a long curve. Mr. Chandless mentions that in 1867 a small portion of water, at this place, was flowing across the neck. Since that time, it has cut down the barrier and built a sand-bar in the upper end of its old curve, which almost fills it up, and which is covered with grass and willows.”\*

We have no evidence that the Amazons itself has ever formed a complete circle in this way, but we sometimes see marks of one about the smaller side-channels. Where the Amazons has two channels, on either side of a delta-island, it may, eventually, abandon and fill up one, and widen or deepen the other; we have evidence that it has done this in some places, and it is easy to see that certain channels are now being filled up, while others are growing wider, almost visibly. It is even possible for the river to abandon its own channel and pass off, through a widened *furo*, into that of a tributary. Probably it was a change of this kind that drew the Amazons through the narrow gate at Obidos. Formerly, the main channel lay far to the south, in what is now the shallow Lago Grande de Villa Franca, but a *furo*, leading to the Trombetas, offered a shorter course, or a clearer one; the *furo* was widened and deepened, and the lower part of the Trombetas channel was appropriated to the monarch flood. The change is still incomplete, and the channel is hardly half as wide as it is above and below.

Every one knows that river-islands tend to slide down the stream; that is, they are washed away above, where the current beats against them; and they are built up below, where there is an eddy and still water. So it happens that the highest land on any Amazonian island is generally up the stream; below, there may be a tract of swampy forest, then a low, half-flooded meadow, with a few willows, and finally a shallow, which may extend half a mile below the island proper. This simultaneous destruction and growth of an island is not very apparent from year to year, but we must remember that the Amazons has worked for centuries, millenaries; so it may well be that an island has sometimes slid down to the mouth of a tributary, and thus added a channel or two

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\* Fifteen Thousand Miles on the Amazons, p. 459.

to the lowland system of the latter. Such *paraná-mirís* might be half filled in, and narrowed so that they would appear to belong to the lesser river, although they were old channels of the Amazons itself.

The annual rise of the Amazons tends to increase the number of channels; when the banks are almost covered, the river-water may find its way through the lakes and meadows, and so, by their outlets, into the main channel below; a current, once formed in this way, will gradually dig a channel for itself; year by year, with the floods, this channel will grow deeper, until it reaches the level of low water, and becomes permanent. If it gives a short cut across a curve, it may eventually become the main channel; for a river almost always chooses the shorter of two courses, and abandons the longer one.

This building and tearing down and rebuilding has been going on so long, and is so complicated, that we cannot always trace a channel or island to its birth; but the more general features remain, and everywhere we find, not a meaningless confusion of land and water, but a system, governed by laws, like everything else; effects of hidden causes, which, whether we can discover them fully or only see them in glimpses, are full of interest.

I have said that steeply cut clay banks almost always indicate places where the river is washing away the flood-plain. In canoeing about the channels, one is surprised to find so many of these high, steep banks, and so few of the low ones. The natural conclusion is, that the river is tearing down more than it builds. If we consider the banks alone, this appears very clear. The Amazons is not a muddy stream like the Mississippi; its waters, seen in mass, have a yellowish brown color, but if you dip up a glassful, it hardly appears turbid, and the sediment is very slight. Such a river will build very slowly; but with its swift current, it may wash away vast quantities of clay and mud every year; enough to widen its own channels sensibly, though not enough to make the water very muddy.

But if the islands diminish laterally, they are increased vertically. Watch the meadows during the flood-season. In every little channel, you see water pouring away from the river to the lower ground within. The first sediment is deposited near the shore, to build up a raised border, as we have seen; but there is a vast quantity that runs into the lakes beyond. You might look for a corresponding outflow, as the waters recede; but instead of that, this inflow is kept up, far into the dry season. All the time, there is an immense evaporation over the flooded land—an evaporation, of course, of clear water, which is replaced by more turbid water, from the river. This work goes on for months; in some places all the year round; for, even in the dry season, many of the lakes receive steady additions from the river to make up for the

evaporation. The water, then, flows on, but dries off; all matter held in suspension, all in solution, is left on the surface. Add to this the chemical action of the grass-growth, which takes material from the air and water, and leaves it as vegetable matter, and we can easily see that the vertical additions to the islands must be very great. Yet I think we have one indication that the Amazons is washing away the lowlands faster than it is building them up. From the Pongo de Manseriche to the Atlantic, the river touches the high land only at rare intervals. None of the great tributaries are as turbid as the Amazons itself; a majority are either black-water rivers, like the Negro, or clear water, like the Tapajós. Yet with all their added volume, the Amazons is at least as turbid, where it enters the Atlantic, as it is in Perú. We must allow for evaporation of the water, but this does not account for all; apparently the river bears to the sea a far greater mass of clay from the low land, than has been contributed to the latter by the high land. In the absence of clearer proof, we can only take this provisionally. If my supposition is correct, it would appear that the Amazons is increasing rather than decreasing its volume; breaking down the barriers that it built up centuries ago.

Map-makers, heretofore, have been content to lay down the rivers and channels and lakes of the Amazons, without troubling themselves about the limits of the flood-plain. Indeed, the best charts are little more than sketch maps, with a few determinations of latitude and longitude to give them a napproximate correctness; hundreds of small lakes, and many channels of goodly size, have never been noted at all. This is the more to be regretted, because the little that we do know of this complicated geography is so full of interesting facts.

The Amazonian flood-plain, as we have seen, varies greatly in breadth. Generally, each tributary flows through a great bay, or widening, of the varzea; but aside from the irregularities caused in this way, it appears that the flood-plain is narrowest where the terra firme at the sides is highest and steepest, and, *vice versâ*, broadest where the land is lowest. Thus, opposite Monte Alegre there is a neck, varying in width from fifteen to twenty-five miles; this is bordered on one side by the steep bluffs of Curuá and Cuçary, and on the other by the Ereré chain of hills and the Monte Alegre plateau. Just above here, the flood-plain stretches out to a width of fifty miles or more, where the land is low; and it is narrowed by the next high land, above Obidos. Along the tributaries, the same rule is apparent. In part, this is a natural sequence of the rule already stated, that the tributaries flow through bays of varzea; for almost every tract of low land, to the north and south, is the valley of a tributary, large or small; the hills are but the ridges and plateaux which divide these valleys.

Where the flood-plain is bordered by hills and high bluffs, its outline is pretty regular ; thus, the line of bluffs below Santarem forms a series of gentle curves, with hardly any breaks, to the Xingú ; and, in like manner, the lower part of the Mãecurú valley, where it borders the Ereré hills, on the eastern side, is not at all irregular. But where the terra firme is lower, there are long points and bays along its edge. Finally, where it is raised only a few feet above the flood-level, the irregularities are endless : there are deep indentations for every stream, gulfs of varzea almost separated from the river, islands of rocky land in the midst of the alluvial plain. The flood-plains of two tributaries may even be connected by straits, far above their mouths ; there is such a strait, it is said, connecting the Trombetas with the Furo de Mamaurú, and cutting off the high land on which Obidos is built ; in the flood-season, canoes can pass from the Trombetas to the Mamaurú, and so to the Curuá, without entering the Amazonian flood-plain at all.

Small streams, which flow into the varzea from such low terra firme, have flood-plains out of all proportion to their size. We have seen this at various places. Thus, the Igarapé de Curicaca is a mere brook on the terra firme, and dry during half the year ; yet near its mouth, in the Lago de Curicaca, it has a flood-plain nearly a mile wide. So with the brooks that flow into Lake Paracary, into the Curuá, the Mãecurú. Perhaps the most remarkable instance that we have seen is the Igarapé de Cujubim, which enters the Mãecurú between two points of terra firme, a mile apart. This would be remarkable enough for so small a stream ; but fifteen miles up the Igarapé, the flood-plain is ten or fifteen miles wide. The tributaries of the Amazons present a similar anomaly. Thus, the Curuá, a small river, has a flood-plain ten or fifteen miles wide, and the plain of the Mãecurú is even wider ; on the Upper Amazons, the flood-plains of the great tributaries are so extensive that they actually run into each other at many points.

Now, a stream, in its constantly changing course, may scoop out a valley \* much wider than itself ; it fills up this valley with its own detritus, and leaves a " river-bottom " or flood-plain, as the case may be. But it is incomprehensible that a brook like the Curicaca should have cut out a valley a mile wide ; much less that the Cujubim should have cut out five miles on either side of its course, and this in hard rock, diorite and sandstone. Moreover, the terra firme at the sides of these valleys slopes gently to the flood-plains ; it shows no evidence whatever of excavation by the stream. The Mãecurú and Curuá present equal

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\* I use the word " valley " here, for want of a better one. In this case, the word signifies only that part of a river-basin that has been cut down to the water's level or near it ; not the whole basin of the stream.



anomalies. Their valleys are almost wide enough for the Amazons, and the sides are full of irregularities. The Purús and Lower Madeira are perhaps less out of proportion to their flood-plains, but in them the wonder is lessened, not removed. Even the Amazons is an anomaly: the great river itself is not large enough to have cut such a trench; much less to have cut it with a thousand irregularities along the sides. For there are long projections of the flood-plain that have no streams running into them, and there are islands cut off by narrow straits, which the river could never have excavated. If we suppose that the river formed its own valley, how are we to account for these outlines?

Two striking instances of these irregularities occur on the northern side of the Amazons. One is at the little Lake Curicoara, which is connected with the southern end of Lake Paracary. Curicoara is nearly round, and about two miles across; it is almost surrounded by terra firme; but on the northern side there are two openings to Lake Paracary; between these openings there is an island of terra firme.\* Now, it is inconceivable that this form was produced either by the river or by small streams; for, on the one hand, the openings are too narrow to have admitted a strong Amazonian current, even if the Amazons had ever occupied Lake Paracary; and no strong current, if it scooped out such a hollow in a curve, would leave an island at the very mouth of it. On the other hand, we cannot suppose that a stream or several streams have done the work; for a single small stream would leave but one opening, and two small streams could never unite over so large a space as Lake Curicuara, and subsequently divide to form two channels, one on either side of a mile-wide island.

The other example is the region lying to the northeast of Lake Curuá, of which I have already spoken in the chapter on the Curuá. A tract of varzea meadow, ten miles long and nearly as wide, is almost shut in from the main flood-plain by a row of terra firme islands. These islands are generally of diorite, which, from its hardness and durability, is much less likely to be washed away, than the sandstone and shale around it. The northern side of the enclosed space is exceedingly irregular in outline; so crooked, in fact, that I could not make even a sketch map of it, in the limited time that I had at my disposal. Scattered over the western end, toward the Curuá, there are many small islands, similar to the chain on the southern side. To the east, the enclosure is nearly completed by points of the main terra firme, and by other small islands.

We could suppose that the hard diorite ridges might be left, where a

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\* I have never visited this lake, but it was mapped for me by my friend, Mr. Paul Meyer, of Pará.

rapid current was washing away the sandstone and shale about them. But the Curuá is too small to have produced such a current, and it is absurd to suppose that the Amazons made its way through such a series of diorite ridges, without tearing them to pieces. Whence, then, came this great enclosed space?

In endeavoring to account for the distribution of the lakes and channels, we supposed that the whole flood-plain was once an open bay. This supposition is the only one, I believe, that will account for the network of land and water which we were considering. Reasoning from it, we arrived at results very similar to the observed facts; in a measure, therefore, the reasoning showed a kind of synthetical proof of the correctness of our supposition. I believe that a similar supposition is the only one that will account for the complicated outline of the flood-plain and its branches.

Fortunately, we are not without a more direct proof of the existence of such a bay. Where clear-water rivers, like the Tapajós, flow into the Amazons, they are merely dammed up at their mouths by Amazonian sediment; farther up, they form wide reaches of still water-lakes, with high land on either side of them, and with no flood-plains at all; still farther up, they are narrowed, and partly filled with alluvial islands; and at their lower falls, they are comparatively insignificant streams.

It is absurd to suppose that the Tapajós, a stream half a mile across, can have scooped out a lake eight miles wide, and in parts very deep. In the lake, there is hardly a perceptible current; the water has no force to wash away the sides, and these are protected almost everywhere by broad sand-banks. Clearly, the lake is a bay, the mouth of which has been closed by the Amazons. It has never been filled in, because the clear water of the Tapajós has brought down no materials for the work.\* The Tapajós is only one example of many among the clear- and black-water rivers; notably the Xingú, the Tocantins, the Negro, the Uatumá, and the Trombetas. All these, in their lower courses, are expanded into lakes, which were once branches of the great Amazonian bay. Just such branches, too, existed at the mouths of the other rivers; only in these latter, the lake-like reaches have been filled in, just as the Amazons itself has been.

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\* Prof. Hartt wrote of the Tapajós: "The river has cut a very wide valley. This, in comparatively recent times, was an estuary, from which, owing to the rise of the land, the sea, but not the actions of the tides, has been excluded. This estuary, which the pure waters of the Tapajós are unable to silt up, is now crowded into a lake, the water being dammed back by the Amazons, which has silted up the side of its own valley, contracting the mouth of the Tapajós." (Bulletin Cornell University (Science), vol. i., No. 1, p. 19.) The Tapajós, in many respects, resembles the Hudson.

As the outline of the Amazonian flood-plain shows indentations for every little stream, so along the clear-water tributaries, every brook forms a lake or bay at its mouth. This is well shown by the small affluents of the Lower Tapajós. Like the main river, the lower portions of these streams are widened out to form long bays; or, where the mouths of these bays have been closed by a sand-bar, they remain as lakes, generally a little higher than the river-level during the dry season. The lake of Alter do Chão is forked, corresponding to two streams which flow into it.

The wide flood-plains of the Curuá and Mãecurú have very irregular outlines; the valley of the Lower Trombetas has similar irregular margins. But in these cases, the intervening spaces have been partly filled in with sediment; hence there are deep varzea bays, and crooked little lakes on either side.

On a larger scale, this old Amazons must have resembled Chesapeake Bay; a long lake, with wide branches at the mouths of the tributary rivers. Being on a level with the sea, it must have been exposed to the action of the tides, probably exaggerated, as in the Bay of Fundy; and the water was brackish or salt.

It is now generally conceded that all estuary bays, like the Chesapeake, the St. Lawrence, the fjords of Norway, and the lochs of Scotland, are produced by depressions of the surface. A river valley can only be scooped out when the land is above the surface of the sea; but as this valley sinks, the sea finds an entrance, and a long bay is the result; with a further sinking, the side rivers are widened in the same manner, and branch bays are produced.

So the great Amazons bay and its branches must have been formed. The same phenomena of wide flood-plains and lake-like expanses are found almost to the base of the Andes, and on the Orinoco. We may, therefore, formulate as follows:

*The Amazons and Orinoco valleys correspond to a great area of depression; the flood-plains of these rivers and their tributaries were estuary bays, which have been filled in with sediment, except at the mouths of the clear-water tributaries.*

This theory of depression accounts, not only for the width of the flood-plains, but for the irregularity of their outlines. For, as the land sank beneath the water, every little valley formed a bay, and hills were left as peninsulas or islands. Where the edges of the valley were high and steep, this was less apparent; but where the water approached the general level of the land, the irregularities were endless, as we see on the Curuá and Mãecurú.

We can understand now, why the Amazons has no true delta like the Mississippi. It has hardly had time, yet, to fill in the estuary bay;

moreover, the sea-bottom, beyond the mouth, must have sunk with the river-valley, and the river will require a vast period to build it up to the level of the surface. During the depression, the estuary of the Amazons became connected with that of the Tocantins, cutting off the great island of Marajó; the island itself has almost disappeared under the alluvial land, but remains of the old outlines are still seen along the southern and eastern sides. The Pará—properly the estuary mouth of the Tocantins—has thus received a contribution of Amazonian water; the mouth is in process of being silted up, while the Tocantins, above, is still open and lake-like.

In the estuary bay of the Amazons, the level of the water must have been the same as that of the sea. As the bay was silted up, the surface of the river would still be at the sea-level, or only a very little above it.

Now, I have yet to learn of any barometrical measurements on the Brazilian Amazons, which satisfactorily show the least elevation above the sea-level. Nominally, indeed, Manáos is placed at sixteen or eighteen metres above the Atlantic, but I could just as safely rely on the observations of Herndon, which made it fourteen hundred and seventy-five feet, while Pebas, far up on the Peruvian Amazons, was only five hundred and thirty-seven feet! It is allowed on all sides that barometrical measurements on the Amazons are nearly valueless, unless for very limited areas. The fact that the tides are felt all through the Lower Amazons, shows that the surface of the river must be very nearly at the level of the sea. It might be urged that a wave from the tides could travel up an incline; but this view is pretty clearly refuted by the fact that the tides are only observed when the river is low. Every summer, the daily rise and fall is felt at Obidos; at that point, the narrowness of the channel seems to prevent a further advance. It appears that these Amazonian tides are caused by a damming back of the water by the ocean tide, with a corresponding rise above. Such a rise would not take place unless the river surface was very nearly level.\* My own decided opinion is, that the Amazons, from Manáos, or even from Tabatinga,

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\* Humboldt (*Travels*, English Translation, vol. v., p. 737) expresses some doubt of this: "The astonishing distance at which the little tides of the coast are felt in the beds of the Orinoco and of the Amazons, has been hitherto considered as a certain proof that these two rivers have only a slope of a few feet, during a course of eighty-five and of two hundred leagues. This proof does not, however, appear irrefragable, if we reflect that the magnitude of the transmitted undulations depends much on local circumstances, on the form, the sinuosities and the number of the channels of communication, the resistance of the bottom on which the tide flows up, the reflexions of the waters by the opposing banks, and their confinement in a straight channel. A skilful engineer, Mr. Bremon tier, has recently shown that, in the bed of the Garonne, the oscillation of the tides go up, as on an inclined plane, far above the levels of the sea at the mouths of the river."

does not run down hill at all ; or, at most, the slight rise toward the west is such as may have been caused by the river itself, building up its bed. The theory of subsidence does not preclude the idea of a subsequent elevation ; only, the vertical extent of such an elevation must have been less than that of the depression. Let us see if there are any evidences for or against such a supposition.

If a rise of land had taken place subsequent to the silting up of the estuary, remains of old flood-plains would be seen above the present one ; these would present flat surfaces of clay, more or less broken up by subsequent denudations. So far as my own explorations have extended, I have never observed such formations, nor any indication of them.

It will be remembered that the eastern side of the Tapajós is bordered by a line of bluffs, about four hundred feet high. Near Alter do Chão, these bluffs recede from the river, and they only approach the Amazonian flood-plain some miles below Santarem. The space between them and the mouth of the Tapajós is much lower ; an undulating, sandy campo, with several outlying hills, broken off from the main plateau. The edge of this plateau, cut down steeply to the lower level, shows pretty clear evidences of river-action.

On a larger scale, the same phenomenon is evident on the northern side of the Amazons, where the steep, table-topped hills are cut down, not to the flood-plain, but to a kind of terrace, which lies between them and the Amazons.

On the campos of Paracary, I have found what appear to be the remains of water-washed cliffs ; blocks of sandstone, often twenty feet long, thrown together in confused heaps. The cliffs themselves have disappeared, or only remain in the low hills near by ; but the blocks lie as they were centuries ago. These and the bluffs, and the table-topped hills, indicate former river-levels ; at first sight we might suppose that they proved an elevation of the land, by which the old shores were placed above the water-line.

I believe, however, that the bluffs and terraces are the shore lines of an old highland river, which existed here *previous* to the sinking of the land and the formation of the estuaries. On a smaller scale, similar terraces are seen along the bottom-land of almost any highland stream ; they are very evident in the valleys of the Catskills, where I am now writing. Such formations are readily explained.

A highland river—that is, one of which the bed is above the sea-level—is constantly cutting its way deeper into the earth, but it is also constantly changing its course. Let us suppose that it has cut out a steep bank, as at *A* in the diagram. In the course of time, the river stands at a lower level, 2, but it has changed its course, and is cutting out a

cliff on the other side, at *B*, while the space between *A* and *B* is left as "bottom land." At a still lower level, 3, it may have its course midway between these two old banks, at *C*; there are then left the cliffs and terraces represented by the heavy line. The cliff at *A* does not prove

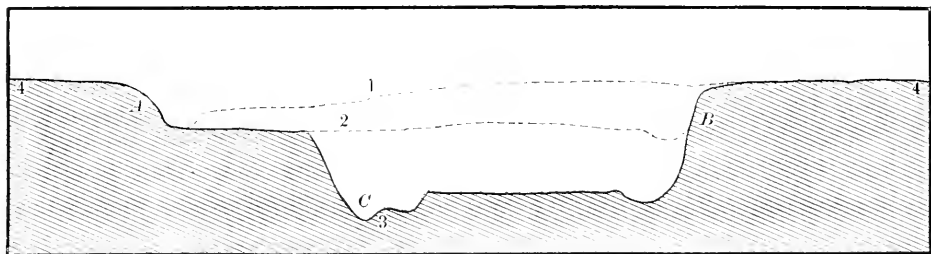


Diagram illustrating the formation of terraces.

that the land has risen; it shows only that the river once stood at a *comparatively* higher level, which may or may not have been the sea-level. The bluffs of the Tapajós and Santarem, and the table-topped hills, appear to have been cut out by running water, and they are precisely what would be formed by highland streams. I can see in them no evidences of an upheaval of the land subsequent to the depression.

We may, perhaps, draw another argument from the irregular outline of the flood-plain. We have seen that many of the small streams run through very wide strips of varzea. Now, if the water stood twenty feet higher, many of these small streams would disappear altogether; their little, shallow valleys would be entirely covered over. Yet the valleys must have been excavated while the land was above the water, and the wide flood-plains indicate a subsidence subsequent to this excavation. We might, indeed, suppose that the valleys had been formed, had sunk below the water-level, and, by a subsequent elevation, had partly emerged; but such slight irregularities would hardly remain, through the immense period of time that would be required for these changes.

The little terra-firme island of Muim, in Lake Curuá, is actually below the high-water level; but it is covered with fragments of ancient pottery and broken shells, like those in the shell-heap at Taperinha. These antiquities must have been lying here for at least two hundred years: probably much longer. The island, during this period, cannot have risen much above the varzea, but it may have been depressed.\*

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\* Movements of subsidence and elevation are very slow; hence, the evidence of this island goes for almost nothing. This, and the preceding argument, rest on the assumption that the flood-plain level is nearly the same as that of the sea; but, as I have before observed, the Amazons may have built up its own bed, and hence, the present flood-plain may be a little higher than the old surface of the estuary; the irregularities of its outline may have been produced by this building-up.

The arguments that I have advanced are purely negative, and subsequent investigations may show this subsequent elevation did actually take place. In the absence of any proof, however, we may dismiss the subject for the present. So far as we know, the last movement of the surface on the Amazons has been one of depression; and for aught we can affirm to the contrary, the land may still be sinking.

How long did the estuary bay exist? How long since the Amazons was a highland river?

As yet, we have no very clear geological evidence on this question; the indications are that the estuary did not date back beyond the Middle Tertiary period, and probably it was much more recent. But that the estuary or the flood-plain must have occupied the valley for a long time, is pretty clearly evident on zoölogical grounds.

It is now almost universally conceded that the evolution of species, in two regions which have been separated from each other, will follow different courses; and the longer this separation is continued, the greater will be the divergence of the species. Thus, England, which was separated from Europe at a comparatively recent period, has only a few peculiar species; Madagascar, which has long been separated from Africa, has a very distinct assemblage of animals.\* Commonly, the barrier between such regions is a channel of water, too wide to allow the passage of species; hence, by a comparison of the faunas and floras of opposite sides of a channel, we get a kind of gauge of its comparative antiquity.

It has long been observed that the fauna of the southern side of the Amazons differs, in a marked degree, from that of the northern side. More recently, it has been found that some of the larger tributaries, as the Negro and Madeira, form similar boundaries between species. Sometimes these species are not well separated, and we call them distinct varieties; but often the differences are very strongly marked. One species of howling-monkey, for example, occurs on the northern side, and another to the south; the *galheiro* deer of the northern campos is never seen beyond the river, and so on. Among insects, the most striking divergencies seem to be among wingless species, or those in which the female is deprived of flight.†

I am not prepared to reason for or against the former existence of glaciers in the Amazons valley. One fact, however, I may note here.

At several points on the Lower Amazons there are great beds of

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\* Wallace · Malay Archipelago, p. 21.

† I regret that I am not prepared to treat this interesting subject more fully; but my zoölogical collections were so large that several years will be required for their arrangement and comparison. The papers of Mr. Bates should be consulted on this point.

rounded stones, often forming a layer ten or twelve feet thick, and apparently extending over many square miles of country. The bowlders are of hard sandstone and diorite, like those of the palæozoic beds near them, but I have seen no traces, in the layers, of the coarse, purple Tertiary (?) sandrock, which is found all over the Lower Amazons. Often, single masses are a foot in diameter. A great region in the forest, northwest of the village of Curuá, is covered with these rounded stones; wherever there is a stream or gulley, they appear on the sides and bottom, often resting on solid rock below; but the bowlders are of various lithological characters, and different from the bed beneath. Northeast of Paracary I found these bowlders at Terra-Preta; I have seen them on the Lower Mãecurú; and on the Tapajós, nearly opposite Aveiros. I discovered a similar formation capping a bluff, two hundred feet above the river. I have no proof that these deposits have any connection with each other; but even if they have not, the question still remains, How did the bowlders get there? The little rivers could not have formed such immense deposits. At the north, we are accustomed to refer like phenomena to glacial action, and often on very slight proof. I have seen no other indications of glaciers on the Amazons, and, in any case, I do not consider myself competent to distinguish between true moraines, and fluvial or other boulder deposits; consequently, I shall not attempt to theorize on the facts at all.

With the slight material at our disposal, we cannot reason much on the more ancient history of the Amazons valley. The great western plains, and the connection with the Orinoco, tempt us to believe that this region must have been occupied by a great lake or sea. At that time the Amazons may have emptied westward into this sea. We know that, at present, the highest land in the valley is at the eastern end; but it may be that the western depression was caused by a more rapid subsidence.

What we know of the geology of the valley may be résuméd in this: The lowest observed rocks on the Eastern Amazons are schists, quartzites, porphyries, and other altered beds, appearing on the southern side near the lower falls of the Tocantins, Xingú, Tapajós, and probably the Madeira; on the northern side, at the falls of the Trombetas, and on the Curuá.\* These metamorphic rocks, strongly inclined, serve as a foundation for a series of Devonian and Carboniferous rocks, which, where observed, are generally horizontal, or dipping slightly away from the river; but at Ereré they form a dome. The Devonian Series has been observed near Monte Alegre, on the Mãecurú, Curuá,

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\* From the latter stream I have only pebbles of metamorphic rock, washed down by the river, and picked up near the lower fall.



Trombetas and Tapajós; the Carboniferous (Coal-measures) at all these localities, in the region between the Mãecurú and the Curuá; on the Jamundá and Jatapú (Barboza Rodriguez) branches of the Maue-assú (Chandless), and far up on the Pachitea (Derby, Orton); there are indications of their existence at other points. It is probable, therefore, that a large portion of the Amazons valley is included in this Carboniferous basin. The Bolivian Carboniferous rocks appear to belong to the same formation.

Mesozoic rocks have been observed far up the Purús, by Mr. Chandless; they occur, also, at one or two other points in the valley, and eventually it may be shown that their distribution is much more general than has been supposed.

Above the Palæozoic rocks, on the Lower Amazons, lie coarse sandstones and clays of uncertain age, but probably not older than the middle Tertiary. Similar clays on the Upper Amazons are underlain by other clays, containing bands of lignite, and Tertiary fossils.

But in geology, as in geography, the Amazons valley has only been touched here and there.



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